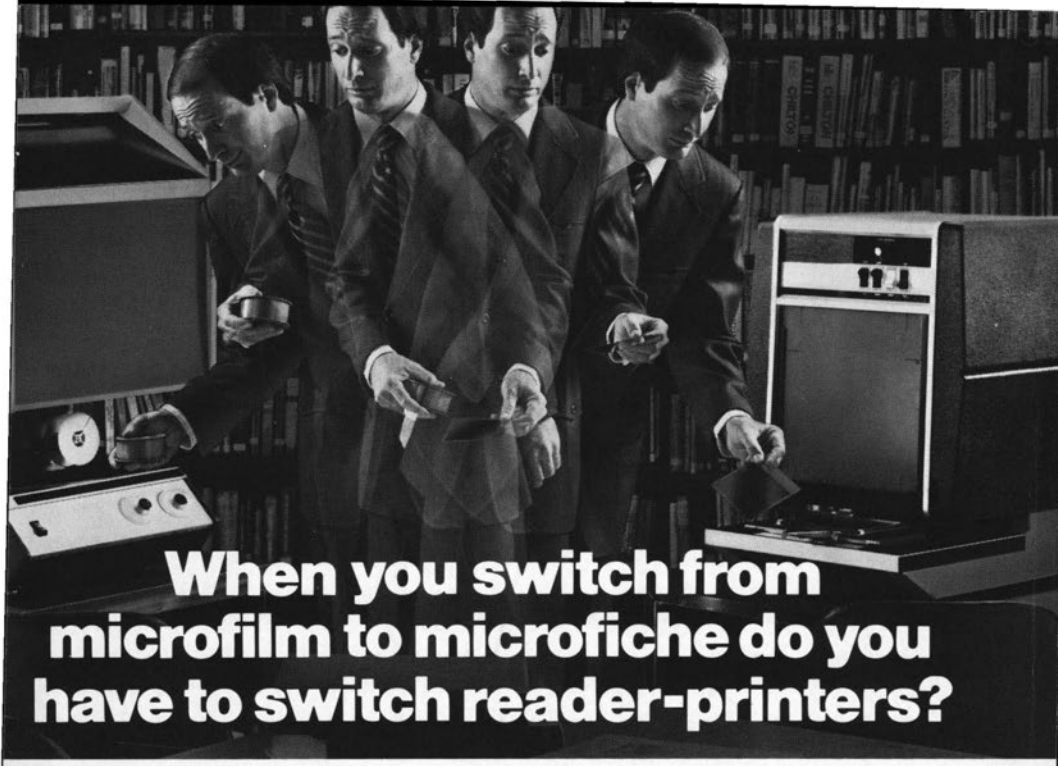
ISSN 0010-0870

COLLEGE & RESEARCH LIBRARIES

MARCH 1981
VOLUME 42
NUMBER 2

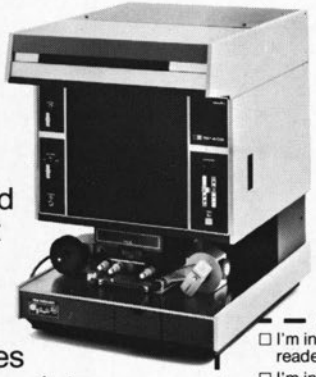
In This Issue—



When you switch from microfilm to microfiche do you have to switch reader-printers?

Not if your library has the incredibly versatile Minolta RP 405 or its larger 11″ x 17″ screen version, the RP 407.

They both handle virtually any microformat made. The quick-change film carriers put 16/35mm roll film, cartridge, jacket, and fiche capability right at your fingertips.



And unlike many other reader-printers, Minolta gives you detailed positive prints from either positive or negative film. What's more, the prints are permanent, and can be written on.

The RP 405 and RP 407 also are amazingly easy to operate, so you won't have to spend a lot of time teaching the public how they work. You can even add the optional coin-op module to save you even more time.

So now you can switch formats to your heart's content. But first, you have to switch to Minolta.

minolta
MICROGRAPHICS

☐ I'm interested in seeing the Minolta reader-printers in action. CR 3
☐ I'm interested in more information.

Name_____
Title_____
Library_____
Street_____
City_____
State_____ Zip_____
Phone_____
Mail to: Minolta Corporation, Micrographics Division, 101 Williams Drive, Ramsey, N.J. 07446. (201) 825-4000

If you don't insist on a Minolta this time, you will next time.

History in the Making

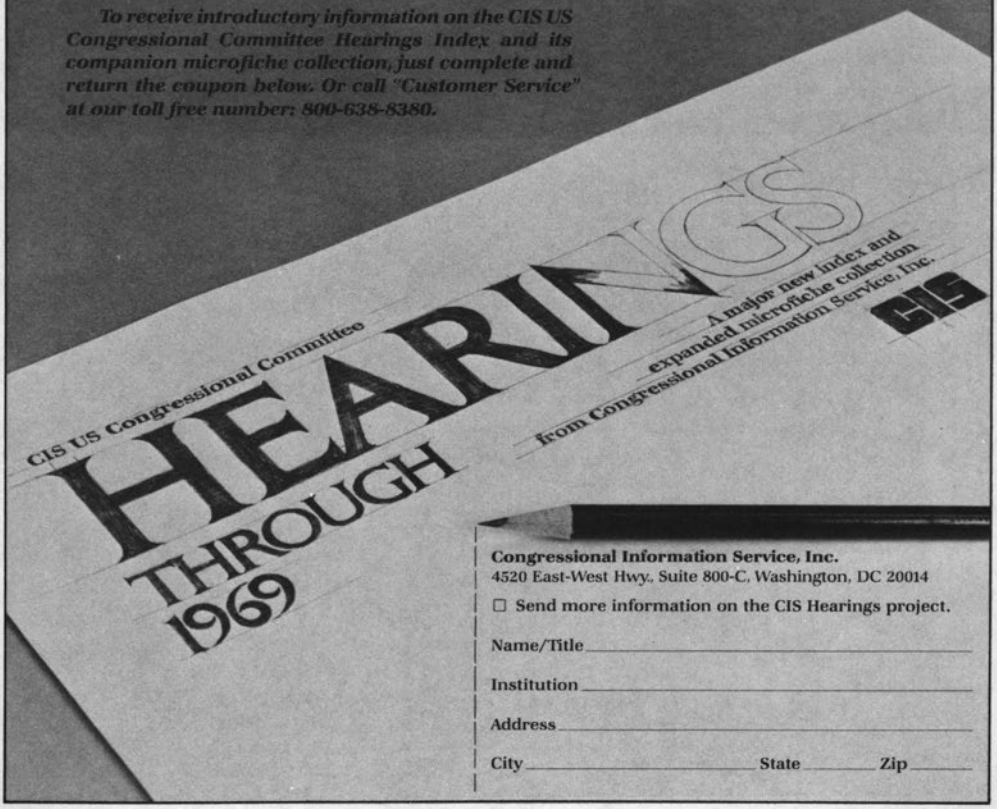
Since the early 1800s, US congressional committees have held hearings to consider wide ranging matters of national and international significance. In so doing, they have marshaled the opinions and advice of the nation's leading experts and scholars.

The transcripts of this testimony, along with supplementary studies and other materials submitted for the record, represent a unique resource for anyone interested in American government, politics, and society. Because they contain firsthand accounts of contemporary events and perceptions, hearings publications are authoritative chronicles of history in the making.

In a sense, CIS is making history, too. We currently are preparing the first retrospective subject and witness index to congressional hearings, from the earliest items known through 1969. To assure that these publications are readily available, we also are producing a comprehensive microfiche file.

With these important new research aids, your library's users can do more than read about America's past. They can witness it.

To receive introductory information on the CIS US Congressional Committee Hearings Index and its companion microfiche collection, just complete and return the coupon below. Or call "Customer Service" at our toll free number: 800-638-8380.



Congressional Information Service, Inc.
4520 East-West Hwy., Suite 800-C, Washington, DC 20014

☐ Send more information on the CIS Hearings project.

Name/Title _____

Institution _____

Address _____

City _____ State _____ Zip _____

COLLEGE & RESEARCH LIBRARIES

MARCH 1981
VOLUME 42
NUMBER 2

CONTENTS

COLLEGE & RESEARCH LIBRARIES

Editor: C. JAMES SCHMIDT

Assistant Editor: MARTHA M. SCHMIDT

Brown University
Providence, Rhode Island

College & Research Libraries is the official journal of the Association of College and Research Libraries, a division of the American Library Association. It is published bimonthly at 50 E. Huron St., Chicago, IL 60611. Second-class postage paid at Chicago and at additional mailing offices.

Manuscripts of articles and copies of books submitted for review should be sent to the Editor: C. James Schmidt, Editor, *College & Research Libraries,* Box 1946, Brown University, Providence, RI 02912. Phone 401-863-2162.

Instructions for authors: Manuscripts are to be typewritten, double-spaced, and submitted in three copies. The title, name, and affiliation of the author and an abstract of 75 to 100 words should precede the text. Bibliographical references are to be consecutively numbered throughout the manuscript and typewritten, *double-spaced,* on a separate sheet or sheets at the end. The journal follows *A Manual of Style,* 12th ed., rev. (Chicago: Univ. of Chicago Pr., 1969), in matters of bibliographical style. Authors may consult recent issues of the journal for examples of the style. Further information on submission of manuscripts is included in a statement in *College & Research Libraries* 41:67–68 (Jan. 1980).

Production and circulation office: 50 E. Huron St., Chicago, IL 60611. Advertising office: Leona Swiech, Advertising Traffic Coordinator, 50 E. Huron St., Chicago, IL 60611. Change of address and subscription orders should be addressed to *College & Research Libraries,* for receipt at the above address, at least two months before the publication date of the effective issue.

Annual subscription price: to members of ACRL, $12.50, included in membership dues; to nonmembers, $25. Retrospective subscriptions not accepted. Single copies and back issues, $5 each.

Inclusion of an article or advertisement in *C&RL* does not constitute official endorsement by ACRL or ALA.

A partial list of the services indexing or abstracting the contents of *C&RL* includes: *Current Contents: Social & Behavioral Sciences; Current Index to Journals in Education; Information Science Abstracts; Library & Information Science Abstracts; Library Literature;* and *Social Sciences Citation Index.* Book reviews are included in *Book Review Digest, Book Review Index,* and *Current Book Review Citations.*

COLLEGE
& RESEARCH
LIBRARIES

Editorial

A recent issue of *Humanities* (December 1980), published by the National Endowment for the Humanities, featured an article on conservation by Ann Russell, director of the New England Document Conservation Center. The title of the article, "The Quiet Disaster," had the usual Armageddon-like tone for articles on this topic. A similar article, which appeared in *The Chronicle of Higher Education* (May 30, 1978), was entitled "Damage in the Stacks."

In this issue, we present an essay that describes the Council on Library Resources' long interest in and generous support for research on various aspects of the conservation/preservation problem. Among the impressions that will be left with a careful reader of this essay is that "the problem" is, in fact, an apparently infinite complex of many discrete problems—of physical chemistry, of lighting design, of environmental pollution and control, of engineering, and so forth.

Given our success as a profession in shaping the technology of computing (hardware and software) to resolve problems of bibliographic control, one wonders if we can assemble a different but equally diverse array of resources and skills to address conservation, for it will surely require as sustained an effort to preserve the twentieth century's bibliography for the twenty-first.

C.J.S.

NANCY E. GWINN

CLR and Preservation

The deterioration of library materials has become an increasingly critical problem. Many of the programs devoted to finding solutions during the last twenty-five years have been sponsored by the Council on Library Resources (CLR), a private, operating foundation. CLR grants supported chemical and applied research in the causes of paper deterioration, helped to establish conservation laboratories, and supported development of new equipment and tests. CLR also has assisted in attempts to establish cooperative preservation programs and to spell out a national strategy. Recent events show a heightened awareness of the problem; several new programs and promise of increased funding give hope for the future.

IN A FULL-PAGE COLOR PHOTOGRAPH in the April 1980 issue of *Smithsonian* magazine, Library of Congress restoration officer Peter Waters stands enveloped in a shower of paper fragments, the remains of a scholarly work blown from his open hand by a puff of exhaled air. No more dramatic testimony is needed to illustrate the danger the United States is in "of losing its mind."[1] The history of why millions of books, journals, manuscripts, and other paperbound records of our cultural and intellectual inheritance are deteriorating has been carefully documented. Indeed, in the last twenty-five years, a litany of shocking examples of decay and calls to action has rung repetitiously through the literature, often with quite positive results. Activity on many fronts has led to substantial chemical research and laboratory testing, to the establishment of preservation programs in individual institutions, and to cooperative efforts to ensure preservation of specific categories of materials. Yet, despite this attention, the disparity that Edwin Williams pointed out in 1969 "between the alarming statements that have been published and the alarm that has been generated in individuals, even historians, remains."[2] It persists because the deterioration is passive, largely unnoticed by the library user until a book or journal is requested and the pages begin to crumble in the hand.

Much of what has been accomplished in the last quarter of a century has been made possible through an array of grants furnished and programs administered by the Council on Library Resources, Inc. (CLR), an independent, private, operating foundation established in 1956 by the Ford Foundation. In recognition of the seriousness of the problem of deterioration of library materials, within its first year of operation CLR initiated a study of the causes. Since that time, the council has authorized expenditures of more than $2.5 million on preservation-related activities.

Periodically, however, it is necessary for the foundation to reassess its role, review its past efforts, and use the insights gained to devise new strategies for the future. This is in part a desire to analyze and learn from past failures and build on successes. But it is also a response to change, both external and internal. A recent change in the council's presidency provided the occasion for a total review of its programs and priorities. A change from the single benefaction of one foundation to multifoundation support of the council's program reinforced the need for such a review. But of more importance,

Nancy E. Gwinn, formerly program officer at the Council on Library Resources, is associate director for program coordination for the Research Libraries Group, Inc., Stanford, California.

perhaps, is the increased attention of others, some such as the National Endowment for the Humanities (NEH) and the Department of Education with far greater resources, to the possibility of loss of part of our heritage and the impact of that loss on the future of scholarship.

The purpose of this paper is to review and summarize the council's preservation program, to discuss its present activities, and to set forth some ideas on the future of council activity in this critical area. The council has in the past also worked hard to assist in improving microform technology, which has considerable benefit both for preserving the intellectual content of books, journals, and other documents and for making them more accessible. Projects involving the design of prototype equipment or systems have not been included here, nor have CLR-supported microfilming projects, unless their principal objective was for preservation.

Although the limits to its resources have, from its genesis, prevented the council from assisting individual institutions in preserving their collections, the council has consistently searched for programs that would advance the knowledge and techniques of all libraries by attacking the root causes of the problem and assisting the development of mechanisms to overcome them. CLR programs thus can be readily grouped into two categories: (1) research, analysis, and dissemination; and (2) national planning.

Research, Analysis, and Dissemination

Lack of information about the causes of deterioration, coupled with a lack of understanding about what was in fact known, was clearly the most critical problem in the field of preservation in the 1950s. The obvious need was for research, both pure, chemical research to determine the reasons for the increasingly swift decay of paper, and applied research to develop techniques to combat it. Finally, dissemination of results, procedures, and techniques to those in a position to act was imperative.

William J. Barrow Research Laboratory

Central to any discussion of council activity in preservation research is the figure of William J. Barrow and the research laboratory that bore his name. A document restorer at the Virginia State Library, Barrow invented a lamination process to protect valuable manuscripts and records. But he worried that papers would continue to deteriorate inside the lamination, and this stimulated him to begin a series of investigations concerning causes and remedies. His study ended only with his death in 1967, although the work he started subsequently continued for some time.

Prior to becoming the first president of the council, Verner W. Clapp worked for many years at the Library of Congress (LC). An amateur bookbinder, Clapp acquired various responsibilities at the library, which included the repair of documents, binding, and preservation. He and Barrow became acquainted, and a warm personal and creative professional relationship developed that was to have a fruitful result, as revealed in a 1968 letter from Clapp to Barrow's son:

> While I was still at LC your father and I used to discuss the need for research in the book-materials area. However, while I was able to throw small commissions his way, LC had no research money. But in 1956 I became president of the Council on Library Resources, Inc., and the road to research suddenly opened up. The rest is history.[3]

Convinced that acid was the chief cause of paper decay, in the 1940s Barrow developed a deacidification process based on the submerging of paper in baths of calcium hydroxide, calcium bicarbonate, and/or magnesium bicarbonate. He continued valuable studies of inks and old papers and published his findings with the help of Clapp, who had become his collaborator and unofficial editor. By 1957 Barrow was eager to begin an organized program of testing. In that year he was given the opportunity, under the auspices of the Virginia State Library and with funding from CLR in one of its first grants. By determining resistance to tearing and folding, Barrow tested paper from 500 books, published from 1900 to 1949, that had "spent sheltered and temperate lives in the scholarly atmosphere of Virginia institutions."[4] Similar results were produced by testing freshly manufactured papers to which artificial aging techniques were applied. And the results were stagger-

ing. "It seems probable," he said, "that most library books printed in the first half of the 20th century will be in an unusable condition in the next century."[5]

As part of the same project, Barrow collected papers from the seventeenth and eighteenth centuries and subjected them to chemical analysis. As he reported in *Science*, the "acidity of the weakest papers is, on the average, from six to ten times as great as that of the strongest."[6] This was not a new discovery, nor was Barrow's identification of alum-rosin sizing and residual chlorides from bleaching as the perpetrators. But in this first investigation and more extensive later ones, also funded by CLR, the facts were documented as they never had been before.[7]

Barrow's findings disputed the prevailing theory of the time that paper deterioration was caused primarily by polluted urban, or industrial, atmosphere and that paper made entirely from rag would ipso facto be the strongest. Although pollution does play a role (and in some areas, such as New York City, a critical one), Barrow identified manufacturing processes as the principal cause of paper decay; in a later investigation of book papers manufactured from 1800 to 1899, he was able to trace historically the loss of strength in papers in a time line that matched the introduction by paper mills of alum sizing and the use of cheaper and shorter fibers.[8]

Barrow was convinced that a permanent and durable paper could be made that would avoid the pitfalls of the manufacturing process and still be economical. Accordingly, he developed specifications using chemical wood pulp and an alkaline sizing (Aquapel) that had recently come onto the market. An experimental run at the Herty Foundation and later tests at a commercial mill proved successful.[9] Testing showed that the paper had an expectation of longevity comparable to that of the fine book papers of the past, yet it was within a medium price range. Named *Permalife*, the paper was manufactured for fifteen years by the Standard Paper Company. When Standard closed in the mid-1970s, Howard Paper Mills, Inc., of Dayton, Ohio, purchased the rights to Permalife, as well as Standard's inventory.

On September 16, 1960, the American Library Association and the Virginia State Library called a conference on permanent/durable paper, to which were invited scientists who served Barrow as consultants, representative librarians, archivists, book publishers, book designers, printers, papermakers and merchants, paper chemists, and others. The purpose was "to explore the potential benefits for the users of books offered by the new chemical wood pulp paper. . . ."[10] While there was enthusiasm among the participants familiar with the paper for its potential, the critics raised issues that have a familiar ring: "it would be wasteful and costly to try to upgrade the paper used for all books; much that was published was intended to be of only temporary use or was not in any case worth preserving; anything worth preserving would be reprinted if there was a need for it or if it became a 'classic'; it was impractical to publish part of an edition on permanent/durable paper unless a large group of libraries subscribed for all copies in such an edition; there would be problems of printability; and manufacturers would be hesitant to increase paper prices simply to increase permanence or durability on a large scale."[11] It was also noted that while consumers demanded much of publishers and papermakers, permanence and durability were seldom high on the list.

The conference group voted unanimously, however, to "invite the American Library Association to establish a continuing group, constituted to represent the various interested groups here, which would find necessary support to continue some discussion of this problem, looking toward mutually agreeable solutions."[12] Thus the ALA Joint Committee on Permanent/Durable Paper was born and was charged with reviewing Barrow's tentative specifications and, based on this review, with developing "acceptable standard specifications for paper of this or similar type, to establish standards on a national scale, to establish a suitable designation, to determine costs, to promote use, to develop a quality control program including testing, and to stimulate further research."[13] It proved to be too great a task. After one meeting, a stalemate occurred because of disagreements on, among other

things, testing procedures. While an attempt was made to assess the printability and ease of handling of permanent/durable papers along with other promotional efforts, in 1968 ALA requested the council's permission to dissolve the committee because, as constituted and administered, it "was unwieldy and thus relatively ineffectual in accomplishing the assignment."[14] The council concurred, noting that the committee was "unable to realize the hopes that led to its establishment."[15]

Up to the time of the 1960 conference, Barrow's investigations had been carried out with the meager resources of his restoration shop in the Virginia State Library. In 1961, at Clapp's suggestion and with the aid of council funds, he took advantage of the hospitality of the Virginia Historical Society to construct in its building a paper-testing laboratory employing the most exacting controls of temperature and humidity and devoted exclusively to problems of preservation of library materials. On August 1 he signed the first of a series of contracts with the council that continued for the next sixteen years.

Assembling a small staff, Barrow opened his laboratory with an investigation of an aerosol deacidification method that could be used on whole books, rather than separate pages, and with the development of methods for predicting the longevity of polyvinyl adhesives suitable for perfect bindings. He continued to study what had happened to book papers from the fifteenth through the nineteenth centuries, and he began to look at the effects storage temperatures have on the permanence of paper. He developed spot-testing procedures so that librarians and archivists would have a quick and easy method of distinguishing stable from unstable book and record papers. Not all of his work, however, was done under direct council sponsorship.

In 1959 the American Library Association began its Library Technology Project with the aid of a council grant. The project staff engaged the Barrow Research Laboratory on several efforts. One investigation led to an improved paper stock for use in the manufacture of library catalog cards. But the most important was the laboratory's assistance in ALA's development of standards for library binding. Barrow and his staff participated in the research and development phase of this project, during which they established criteria for the performance of bindings used in libraries and designed testing equipment so that the performance could be measured.

The results of Barrow's work on many of these matters appeared in a series of booklets entitled *Permanence/Durability of the Book*. His reputation was growing in national and international spheres. In 1967, the American Library Association asked him to travel to England to consult with British paper manufacturers to ensure that a permanent/durable paper could be used for the pre-1956 imprint edition of the *National Union Catalog*, a work subsequently published by Mansell in more than 700 volumes. The final volumes are scheduled to be issued in 1981. Barrow found three British mills skilled in the use of alkaline size and eager to learn his techniques for properly preparing the necessary long fibers. He subsequently tested the paper produced and of that which was finally selected (manufactured by Guard Bridge Paper Company, Ltd.) said: "This has the highest strength characteristics and one of the best rates of deterioration of any 20th century book paper that we have tested in this laboratory."[16]

Throughout the 1960s Barrow worked tirelessly to awaken the general public to the gravity of paper deterioration and the potential loss to society of its recorded heritage. He wrote extensively, stimulated others to publicize the enormity of the problem, and was himself the subject of several articles. Perhaps because of his nonscientific background, he was able to tell his story in terms easily understood. An editorial, "The Paper Man," in the *Richmond News Leader* of June 8, 1963, is ample illustration:

> So off we went to Battle Abbey (the building housing the Virginia Historical Society), past rows of great Virginians peering with portrait eyes, down stairs to talk to Mr. Barrow over a bowl of apples and pears. "See," he said, taking a yellowed book off a shelf of yellowed books. It was an old cookbook, "Printed in 1905," he said, as page 282 came out in his fingers. We folded the paper over; then back. Two folds were all the

paper could take. The page fell into two pieces, and the recipe for Chicken a la Terrapin was cut in half.

There were, of course, critics of Barrow's results. Some thought Barrow's specifications for permanent/durable paper might be "excessively high" or "not really practical" for all except a few percent of the users of printed materials. Indeed, a later project of the laboratory, under contract with CLR and the Library of Congress, was a revision of the specifications, but they were not substantially lowered, and eight of thirty-two commercial papers were found to meet them. The close relationship between Barrow and the Standard Paper Company was viewed with disfavor by some manufacturers, who thought that Barrow did not give enough recognition to others who were producing alkaline papers. It was reported that the rag paper manufacturers had their own group that as a whole had been questioning Barrow's accomplishments in the permanent/durable paper field. But his reputation and the quality of his work survived these mild criticisms, and his efforts continue to inspire those who are working today on finding solutions to one of the library world's most baffling problems.

Following Barrow's death, his wife and son determined to carry on the laboratory, and the council agreed to support a continuance of the projects Barrow had begun. Dr. R. N. Dupuis, retired from a position as vice-president in charge of research at the General Foods Corporation and one of Barrow's consultants, was hired to direct the laboratory on a part-time basis. In 1971, it was determined that the laboratory would benefit from full-time direction, and Dr. Bernard F. Walker, formerly corporate director of research for the Huyck Corporation, a manufacturer of components for the paper industry, was appointed. Dr. Dupuis continued his association with the laboratory, however, as an official CLR representative, serving on site in Richmond as liaison in scientific and policy matters.

In the post-Barrow period, work continued at the laboratory on the effects of temperature and humidity on the permanence and durability of paper. Laboratory staff also continued studying the characteristics of centuries-old book papers and tested some modern papers for the Library of Congress and others, although care was taken throughout the history of the laboratory to keep its focus on research rather than quality control. But its first major activity under Dupuis' direction was to evaluate a British vapor-phase paper-deacidification method. This activity laid the groundwork for the laboratory's principal focus for the next ten years.

In 1966, W. H. Langwell, a British liquor chemist, developed a vapor-phase deacidification process for books and documents. The process used cyclohexylamine carbonate (CHC), which was applied by interleaving books with treated absorbent paper or by placing granules of pellets, loose or in sachet form, in manuscript boxes. Informed of the matter by a British colleague, Louis B. Wright, the council's vice-chairman, alerted Verner Clapp who, with Barrow's agreement, thought the method should be tested.

In its conclusions, the laboratory stated that CHC increased the pH of book papers as well as their resistance to folding and tearing. It appeared to affect the rosin sizing, however, and also decreased the brightness and fluorescence of the papers treated.

More important, however, the laboratory confirmed that CHC hydrolyzes to cyclohexylamine, an odorous and toxic chemical, on exposure to moist air often found in libraries. An opinion from the Food and Drug Administration confirmed that "Cyclohexylamine has both carcinogenic and mutagenic potential. . . ."[17] As a result of the laboratory's report, the Process Materials Corporation, a U.S. distributor of the CHC products, which had already suspended sales, removed the products completely from the market.[18]

Nevertheless, the thought that someone had found a vapor capable of deacidifying entire books excited laboratory staff, who began searching for a nontoxic substance that might achieve the same end. At a July 1969 meeting of the laboratory's advisory group, to which were added representatives of the American Library Association (ALA), the Association of Research Libraries (ARL), the Center for Research Libraries, and others, the possibility of discovery of new

methods of vapor-phase deacidification received serious attention as one of the three highest priorities for the laboratory. "What is needed," the group concluded, "is a one-time mass process not requiring unbinding of the treated books."[19]

The laboratory experimented with several substances, even securing a patent on one (a vapor caused by the reaction of ammonia and formaldehyde to form a solid, hexamethylenetetramine), but none seemed entirely satisfactory. Then, in July 1970, one of the laboratory's consultants suggested that morpholine, a common chemical used at that time in many floor waxes and polishes, be used to stabilize cellulose with respect to pH. By December, the laboratory was able to report surprising results in terms of the capacity of morpholine to deacidify paper. The laboratory tested several other amines, but morpholine continued to be the most satisfactory. Sophisticated hardware for administering the vapor-phase treatment was also designed and tested. After years of painstaking experimentation patents were obtained on two versions of the process, one using a strong concentration of morpholine, the other a mild. While the strong process produced excellent results when applied to unbound books, the mild version was considered more suitable for mass deacidification users, since it could be used without harm to books bound with pyroxylin-impregnated cloth, a common feature of library bindings.

In 1975, the laboratory phase of the development of the morpholine deacidification process was brought to a close. With matching funds from the National Endowment for the Humanities and the council, the Virginia State Library and the Barrow Laboratory began a large-scale test of the process using custom-made equipment, manufactured by the Vacudyne Altair Corporation of Chicago, capable of processing fifty books at a time. At a meeting, sponsored by the American Chemical Society in 1976, the laboratory's director, Dr. Walker, summarized the advantages and disadvantages of the process.

The morpholine process, he stated, deacidified about eighty to ninety pounds of books in sixty minutes, at an estimated total cost (at that time) of about thirty-two cents a pound. The process could be used without likelihood of damage to 99 percent of the normal books found in libraries, and their life expectancy could be expected to be improved on the average about two and one-half times.

The process did, however, occasionally cause color changes on pyroxylin book covers, noticeably changed the color of leather, and occasionally caused groundwood papers to show visible yellowing. The process did not work equally well on every paper nor, unfortunately, did it strengthen paper that had already deteriorated. A capital investment in equipment would, of course, be required.[20]

In May 1977, just before the field trial ended, CLR and NEH gathered a group of scientists, librarians, and conservationists to study the safety and efficacy of the process and consider where and how it should best be used. At the same time, the Library of Congress' Preservation and Testing Office tested the process extensively and generally corroborated the findings of the lengthy and thorough testing previously carried out by the Barrow Laboratory.

The NEH-CLR review panel recommended further testing on the question of whether the morpholine process presented a health hazard to library patrons or staff. In response, a check with the National Institute for Occupational Safety and Health indicated that this agency did not consider morpholine a carcinogen. To further corroborate this point, samples of morpholine-treated book paper were sent to Litton Bionetics, Inc., to be tested using the Ames mutagenicity technique, which showed a negative response, i.e., no evidence of carcinogenic or mutagenic property. Finally, on the question of whether it was likely that the known carcinogen nitrosomorpholine would be formed in significant amounts through the combining of morpholine in treated books with oxides of nitrogen found in polluted air, an opinion was sought from Dr. Robert Taylor, associate chairman of the Department of Chemistry at the University of Michigan and a CLR consultant on the Barrow project. Based on his investigation, Dr. Taylor concluded that the likelihood of this occurrence "is extremely low and the hazard negligible."[21]

Throughout the development of the morpholine deacidification process, the council had been in close touch with the Research Corporation, a nonprofit foundation for the advancement of science and technology that makes new inventions available in the public interest. Research Corporation took over the patenting and licensing of the process and in August 1979 announced that the first license had been granted to the Pacific Northwest Conservation Laboratory of Port Orchard, Washington.

While the work on the morpholine process was proceeding, Barrow Laboratory staff engaged in other investigations. Under a contract with the Library of Congress, the laboratory reviewed the specifications for permanent/durable paper originally established by W. J. Barrow in 1960. The review took into account the changes in manufacturing and technology during the period and resulted in revised specifications. Several existing commercial papers, it was shown, could readily meet them.[22]

Other work included investigations of the effects of storage humidity and temperature on paper, improvement of the equipment for testing fold endurance, and continued testing of various kinds of paper for characteristics of permanence and durability. Just before the laboratory closed, plans had been laid for a project to look for a vapor-phase method of strengthening paper.

The council's relationship with the W. J. Barrow Research Laboratory was described by Verner Clapp as that of "a full, if a junior partner."[23] The council "proposed topics for research, . . . followed the reports in detail, . . . made suggestions for improvements, alternative approaches, etc." He described this "climate of active collaboration on a matter of mutual concern and excitement" as rewarding, and history has shown it to be of profit to libraries as well. When Clapp died on June 15, 1972, his role with regard to the laboratory was assumed by CLR program officer Carl M. Spaulding, who continued a careful oversight of laboratory activities. Periodically, review groups were assembled to evaluate the laboratory's work and to assist in the setting of future goals and priorities. Such a group assembled in 1973 recommended the continuance of the laboratory, which it believed had been a good investment as well as being unique among organizations working in the conservation field. But it recognized that the laboratory was handicapped by its relative intellectual and geographic isolation from the scientific and library communities and recommended that the council explore alternatives to the laboratory as it was presently constituted and sited. In particular, it was recommended that the laboratory be reestablished on a university campus, where contact with the related sciences and technologies and with a large library would be possible.

However, the council was beginning to recognize that the expense of operating an independent laboratory was growing and inhibiting the council's ability to respond to other equally pressing problems. Although the council approved further support for the laboratory, it did so in the hope that the additional funds for its continuation could be found elsewhere.

As noted earlier, funds were secured from the National Endowment for the Humanities for a project involving large-scale testing of the morpholine process. Prospects for other funding, however, were not good, nor was it likely that the laboratory could be relocated easily. Then, just as the large-scale testing was drawing to a close, Dr. Walker, the laboratory's director, suddenly died. With this combination of events, the council regretfully concluded that in view of its "many obligations to libraries and its own funding situation, and because of the increasing costs of the independent laboratory, it could no longer be supported."[24] Following the discontinuance of CLR funding, the Barrow family decided to shut down the laboratory, and much of the specialized equipment was placed on indefinite loan at the Carnegie–Mellon Institute of Research, Carnegie–Mellon University, where it was to be used in the institute's planned research program on paper preservation.

From 1957 to 1977, CLR appropriated both directly and indirectly through the Virginia State Library more than $1.67 million in grants in support of the work performed by W. J. Barrow and subsequently the laboratory that bore his name. The accomplishments for this investment were many. The

principal causes of paper deterioration were identified and documented; permanent/durable paper and card stock were created and continue to be available commercially; attention to this problem, spotlighted by Barrow's work, contributed to a growing availability of acid-free papers in the United States and Great Britain; testing equipment (e.g., universal book tester, openability plate) was developed and made available and other equipment improved; specifications for permanent/durable paper and standards for binding were promulgated; a mass deacidification process was devised and tested; and a series of publications drew attention to the problems of preservation and assisted many to an understanding of their nature and possibilities for solution.

ALA's Library Technology Project

The establishment and operation of the Barrow Laboratory commanded much of the attention and resources of the council. But in the area of preservation, as in other areas, CLR has consistently sought a variety of mechanisms to attack the basic problems and has attempted to coordinate several different approaches. An example of this is the work performed by the laboratory under contract with the Library Technology Project (LTP) of the American Library Association, also funded by CLR. The project's activities, however, were not restricted to preservation, nor were its preservation activities always connected with Barrow.

When the council approved the establishment of the ALA Library Technology Project in 1959, four principal goals were stated:

1. To improve the quality of library equipment, supplies, and systems.
2. To save money expended on inferior products or systems.
3. To save inordinate expenditure of time in ascertaining existing knowledge on these matters.
4. To produce knowledge where now there is none.

The council provided administrative funds for the project, but it required that separate proposals be made for testing programs, each of which would be evaluated on its merits.

Between 1959 and 1973, LTP engaged in a number of preservation-related projects. Several involved the testing of supplies used by conservators, including pressure-sensitive tapes used in the repair and marking of books, polyvinyl acetate adhesives used in mending, laminating equipment, and film coatings and rejuvenation treatments designed to improve the resistance of microfilm to scratching and abrasions caused by use. The tests were usually conducted under contract with both commercial and nonprofit laboratories, such as Barrow or the Chicago Paper Testing laboratories, and the results were published in the official ALA journal.

In addition to testing various products, LTP also attempted to improve what was available. Under contract with the Barrow Laboratory, for example, specifications were developed for a permanent/durable card stock, which would add to the longevity of the millions of catalog cards filed by the nation's libraries on a daily basis. In 1961, with the assistance of the Institute of Paper Chemistry and on behalf of the Public Archives Commission of the state of Delaware, LTP attempted to develop specifications for cardboard stock for manuscript boxes that would make them more suitable for library and archival use in terms of reduced acidity, insect repellency, and fire and moisture resistance. Unlike the former project, where successful commercial runs of a suitable card stock were made, the emphasis in the latter project was on treatments of existing stocks. While it was found possible to build each characteristic into the board, the cost was considered excessive for practical use.

In 1960, with the cosponsorship of the Special Libraries Association (SLA), LTP embarked on a six-year project to develop performance standards for library bindings, which, in many cases, deteriorate faster than the papers they encase. Although specifications had existed since the 1930s for class A library bindings and were amended from time to time, they were considered to be inadequate for two reasons. First, they did not satisfy all of the binding requirements in libraries (e.g., heavily used as opposed to lesser-used materials), and second, they concentrated far too much on

existing and available equipment, materials, and methods and said too little in terms of prospective use and performance.

Five categories of needed bindings were established through the use of an extensive survey. LTP then contracted with the Barrow Laboratory to develop the necessary tests and equipment that would measure performance. In addition, nearly fifty libraries participated in field tests of trade edition, children's, and class A bindings to allow for a comparison of actual use with machine-produced "use." Finally, three "provisional" performance standards—for durability, workmanship, and openability—were published and approved in 1967 by both ALA and SLA and subsequently by the Library Binding Institute. The universal book tester and openability plate developed by the Barrow Laboratory were made available through the Chicago Paper Testing Laboratory, where they are still in active use, primarily in response to requests from publishers.

For librarians responsible for, but unskilled in, the techniques of conservation, perhaps the most useful of the CLR-funded LTP projects was its publication series on the conservation of library materials. Originally planned as an extensive series that would provide a complete manual on the preservation of print and nonprint materials, only two volumes eventually found their way into print, but they have become classics on a conservator's bookshelf. Carolyn Horton's *Cleaning and Preserving Binding and Related Materials* (second edition, 1969) and Bernard C. Middleton's *Restoration of Leather Bindings* (1972) provide clear explanations of processes and techniques, accompanied by plentiful line drawings and some photographs. And both were printed on Permalife paper.

The Library Technology Program, as it had come to be known, was discontinued as a separate ALA unit in 1973 when council funding came to an end. Of the more than $2 million that had been supplied by CLR for support of the program, $212,000 was authorized for investigations relating to the preservation of library collections. ALA continues to supply much-needed evaluative information to libraries concerning equipment, furnishings, automated systems, and supplies through its publication *Library Technology Reports*.

The Chicago Process

The work of the Barrow Laboratory and the preservation projects of the Library Technology Program provided much valuable information to the library community. In 1966 a third opportunity arose for yet another approach to solving the problem of paper deterioration by reducing its acidity, this one proposed by a doctoral student studying at the Graduate Library School of the University of Chicago: Richard D. Smith. Smith's investigation was directed at the nonaqueous deacidification of whole books, and the result was dubbed by Smith as the "Chicago process."[25] By the time the grant period ended in 1970, Smith had developed a procedure for treating single sheets of paper using magnesium methoxide. He eventually marketed the solution commercially under the name *Wei T'o*.

Library of Congress Preservation Office

A fourth opportunity to assist laboratory investigations into the problems of preservation arose when in 1969 the council received a proposal from the Library of Congress requesting assistance in establishing a preservation research and testing facility. According to the proposal, the new preservation laboratory would "function at the national level and in the national interest to identify, assign priorities to, and conduct research on preservation problems related to books, manuscripts, prints and photographs, maps, microfilms, and other forms of microreproductions, and all other materials which must be preserved by libraries and archives if recorded knowledge is to be available for future generations. . . ." The council agreed to provide funds to equip the laboratory and to assist in the review of a proposed research program.

During the grant period, which ran from 1971 to 1975, the library's preservation laboratory staff embarked on a number of investigations, which included an evaluation of known deacidification methods and development of additional ones, stain identification and removal, measurement of folding endurance and tensile strength of paper,

use of graft polymerization methods for strengthening deteriorated paper, and unusual methods of drying books. In addition, the laboratory began work on a vapor-phase deacidification method that utilized diethyl zinc vapor for treatment of books in bulk. Testing of this substance is still taking place. Results have been good in terms of neutralizing paper acidity and leaving an alkaline reserve to combat later acid attacks, but care must be taken with the substance because it is pyrophoric.

New England
Document Conservation Center

Funding the laboratory efforts of William J. Barrow and the Library of Congress was attractive to the council for several reasons. First of all, both operations concentrated on projects of primary interest to libraries and archives, rather than to commercial, industrial, or other interests. Furthermore, both organizations showed promise of having an impact on the library world at large, rather than concentrating on the preservation of the collection of a single institution. In 1972 another opportunity with much the same characteristics appeared. The state librarians of six New England states approached the council with a request for funding, as part of their Interstate Library Compact, the first regional conservation center. The states were willing to put up half of the initial money to get the operation off the ground. Impressed by this commitment and intrigued by the collaborative and regional aspects of the proposal, the council agreed to match the amount. Thus the New England (now Northeast) Document Conservation Center was born and, within the two-year grant period, became self-supporting.

The center has lived up to its early promise. It annually provides workshop services to about three hundred institutions and reaches another thousand through a conservation seminar program. In addition to the restoration of books, prints, maps, broadsides, manuscripts, and similar documentary materials brought to the center by libraries, archives, historical associations, businesses, museums, and others, the center has set up programs involving conservation of photographs and preservation microfilming and provides a disaster-assistance service to institutions in the region.

Florence Flood

In 1966 a natural disaster stimulated a series of CLR research grants relating to preservation. The city of Florence, Italy, was inundated by a massive flood. According to a knowledgeable observer, more than 1,200,000 bibliographic items stored in the basement and ground floor of the Biblioteca Nazionale Centrale di Firenze (BCNF) were damaged, but more than 80 percent were considered salvageable.

The size of the effort required was enormous. "It took human chains of library personnel and student volunteers from all over the world about six weeks just to extract the books from the mud," reported the observer. Fortunately, many nations joined in the restoration work and donated equipment, the time of professional conservators and technicians, and funds for operations. The council also contributed to the effort by funding several proposals for research designed to assist BCNF efforts and to disseminate the techniques used in the Italian national library's restoration department.

In 1968, a grant was awarded to the Imperial College of Science and Technology for investigations of the scientific aspects of conservation, particularly needed with regard to work on the valuable pre-1840 books contained in the BCNF's Magliabechi and Palatine collections. Although work was begun on the bleaching and washing of documents, on the use of heat-set mending tissues, and on limp-vellum binding practices, the project unfortunately became embroiled in an administrative tangle and eventually was disbanded.

Two of the participants, however, received separate grants to continue aspects of the work that had shown particular promise. Christopher Clarkson, an English bookbinder, completed a study of early European limp-vellum binding practices and showed in great detail the process of limp-vellum binding. Margaret Hey, an English chemist, moved to Rome in 1971 to continue her work on bleaching and heat-set paper mending tissues, financed in part by CLR, at the Instituto di Patologia del Libro.

At about the same time, Anthony G.

Cains, a British restoration expert who had been appointed technical director of restoration at the BCNF in 1967, successfully sought support from the council to complete work on a manual of the restoration techniques for printed books and parchment manuscripts used at the library. The council received a draft of the work in 1972 and noted that it included some of the results achieved by both Clarkson and Hey. In 1974, Paul N. Banks, conservator at the Newberry Library, also received a small CLR grant to assist him in writing a manual on library conservation. Neither effort has yet reached publication.

Aids for Conservators

The council's support of these manuals serves as an example of another area of CLR interest within the field of preservation. Occasionally over the years circumstances have allowed the council to assist in the preparation of publications that have the potential of serving the needs of a large number of libraries, archives, historical associations, and other institutions concerned with conservation of cultural properties. In the 1960s, for example, with the cooperation of the National Science Foundation, the council was able to arrange for the translation and publication of several volumes of Russian studies in the preservation of documents and books. The English-language editions were prepared by the Israel Program for Scientific Translations for the U.S. Department of Commerce and were distributed by that agency.[26]

In the 1970s, the American Association for State and Local History (AASLH) sought CLR assistance for the preparation of two volumes directed to persons and institutions entrusted with the care of manuscripts and historical photographs. Kenneth W. Duckett's *Modern Manuscripts: A Practical Manual for Their Management, Care, and Use* (Nashville, Tenn.: AASLH, 1975) was well received and won the 1976 Waldo Gifford Leland prize, given annually by the Society of American Archivists for the best addition to the professional archival literature. In 1977, the AASLH's handsomely illustrated *Collection, Use, and Care of Historical Photographs*, by Robert A. Weinstein and Larry Booth (Nashville, Tenn.: AASLH, 1977), was also published to wide professional acclaim.

National Planning

The work of Barrow and others revealed that the book stacks of libraries contained something in the nature of a time bomb. Acid, compounded by growing environmental pollution, was eating away the records of history at a rapid rate. Advances in microform technology and research into other means of preservation were beginning to point the way to technical solutions. But in terms of the total collection needing treatment, the problem was quickly seen to be of elephantine proportions, much out of the reach of an individual institution. Although cooperative programs are now seen as the answer to many of the difficulties of libraries, they have always been regarded as a necessity in the area of preservation. Yet to date they have proved almost impossible to achieve.

Microfilming has for years been regarded as the most promising means of preserving the intellectual content of deteriorating publications, and it is in this area that the first major cooperative efforts began. Newspapers, invariably printed on fast-decaying groundwood paper, were the most serious problem and thus became the first target in 1938 when Harvard University received a grant from the Rockefeller Foundation to reproduce on microfilm files of foreign newspapers.[27] Recognizing the need to avoid wasteful duplication of limited resources, the Library of Congress set up a microfilm clearinghouse for information about proposed, in-progress, and completed microfilming projects and began to publish union lists of newspapers already microfilmed and lists of newspapers recommended for this treatment. The Association of Research Libraries played a role in much of the planning of these activities. Recognizing the need for expanded coverage of foreign newspapers and of national coordination of such projects, ARL established in 1956 a foreign newspaper microfilm project administered by the Mid-West Interlibrary Center (which eventually became the Center for Research Libraries). Four years later, the

Council on Library Resources entered the picture.

Association of Research Libraries

Three considerations led ARL to conclude that something had to be done about microforms. First, improvement in technology had made it easy to make microcopies of any kind of textual material. Second, for preservation purposes, microform was thought to be more permanent than paper. Third, publishers were beginning to produce original publications in microform. Bibliographic control of microforms was practically nonexistent. No systematic procedure for the reporting of microform projects by their producers existed, nor were there means for libraries to report, for use by others, their catalog entries of individual titles on microform.

In 1960, therefore, ARL sought funds from the council for a study by Wesley Simonton, a professor in the Library School of the University of Minnesota, for the purpose of developing, with the cooperation of scholars, librarians, and producers of microfilms, a comprehensive mechanism for bringing scholarly material in microform under bibliographic control. ARL was not alone in its concern, for it had been urged to sponsor the study by the American Historical Association's Committee on Documentary Reproduction and the American Library Association's Subcommittee on Micropublishing Projects.

The Simonton study recommended several improvements involving the inclusion of microform publications in general catalogs and union lists of materials in other forms, as well as improvements in filming practices. In addition, it was suggested that a new national listing of master microfilm negatives be established to indicate what materials had been filmed and which master films were available for reproduction. With the help of a subcommitttee within ALA's Resources and Technical Services Division, the *National Register of Microform Masters* took shape. In January 1965 a CLR grant to ARL established a unit at the Library of Congress for the purpose of producing the first volume of the resister. Published annually since 1966, the edition for 1979 contained sixty thousand entries in approximately one thousand pages. The Library of Congress assumed financial support of the project in 1967.

The *Register* contained entries for foreign and domestic books, pamphlets, serials, and foreign doctoral dissertations. Newspapers continued to be listed in the LC publication *Newspapers on Microfilm*. Following the establishment of the ARL foreign newspaper microfilming project in 1956, area studies programs continued to expand and the interest of research libraries in foreign newspapers grew accordingly. Separate microfilming and acquisitions projects began to spring up, again causing problems of duplication and accessibility.

The ARL Foreign Newspaper Microfilm Committee therefore expanded its scope from one of oversight of the ARL project to that of developing a truly national foreign newspaper microfilming program encompassing at least two thousand titles and utilizing the resources of the ARL project, the Library of Congress, and other interested institutions. In May 1969, the council funded a preliminary study for such a program. The report made recommendations concerning the expansion of coverage of foreign newspapers required to serve the scholarly community of the United States and Canada and identified institutions willing and able to participate in a national program. Further, it recommended the creation of a national coordinating office "to facilitate institutional cooperative filming or acquisitions and to facilitate accessibility through interlibrary loan and other means."[28] In 1972, the position of coordinator of foreign newspaper microfilming was established within the Reference Department of the Library of Congress. In 1976, coordination of domestic newspaper microfilming was added to the position and it was moved administratively to the library's Preservation Office.

ARL's interest in preservation did not end with microfilming programs, however. For one thing, although it was thought that microforms would be more permanent than paper, no data were available to support that assumption. And while the filming itself was easy, it was still too expensive to

consider application to an entire library collection.

In 1960, spurred by the information and advances produced by the Barrow Laboratory, ARL appointed a Committee on the Preservation of Research Library Materials with Harvard's librarian, Douglas W. Bryant, as chair, to investigate various aspects of the problem of paper deterioration. At the behest of this group, the council began a series of grants that attempted first to gain some idea of the size of the problem and second to develop a national program for solving it.

The first grant, to Virginia state librarian Randolph W. Church, allowed Church to pursue an investigation that would provide, among other things, data as to the number of books in libraries published in the period from the introduction of mechanical-chemical book papers in the 1860s through 1960. Church recommended that a sample of the National Union Catalog be taken, which would allow an estimate of total number to be made. Following this advice, CLR awarded a second grant to ARL to contract with the Research Triangle Institute to carry out the sampling, with the hope of establishing by this means a statistical basis for planning the preservation of research library materials. Based on what had been reported to the National Union Catalog, the institute concluded that research libraries contained at least 7,665,800 separate titles for books (not serials) published after 1869, and that these contained roughly 1.7 billion pages.[29]

The enormity of the problem served as a goad to further action. In 1962, a third CLR grant allowed Gordon Williams to look at methods for (a) coordinating efforts so as to assure maximum utility of results; (b) developing bibliographic control of materials submitted to preservation programs; and (c) developing arrangements for custody and service, in the national interest, of microfilm negatives and other master copies resulting from these programs. Williams' central recommendation was for the establishment of a central preservation agency, federally supported, to preserve one copy of every significant book in its original form (by deacidification and storage at the lowest practical temperatures) and to make microform copies available readily and cheaply to all libraries. Doubts about the longevity of microfilm were expressed, thus the need for preserving at least one copy of an original, and it was shown that it would cost "only about $2 more per volume to preserve the original for an indefinitely long future time and make a microfilm copy of it only when the book needs to be used, than it will cost to microfilm the original now and discard the original completely."[30]

ARL endorsed the report in January 1965. The prospects looked bright when ARL reported to the council that "the Library of Congress had agreed to accept responsibility for 'a national program for the preservation of deteriorating books in accordance with the principles set forth in the report. . . .' "[31]

The Library of Congess had, it turned out, set aside some twenty thousand items that had been pulled from the main collection because they were too brittle to withstand use. Using this collection, the library proposed a pilot project that would develop what it hoped would be inexpensive routines for comparing existing copies of deteriorating works wherever they were located and determining the best copy for preservation, for arranging for appropriate treatment, and for recording the copy's existence so other libraries would not have to repeat the operation. Through ARL, CLR awarded the required funds and the library set to work.

In November 1967, the library reported to ARL that "it is administratively feasible to establish a national preservation collection of materials now deteriorating in the nation's research libraries. This assessment, however, extends only to the identification of brittle or deteriorating materials in other libraries and to a determination of the physical condition of such materials." Actual implementation, the library said, would pose substantial technical questions as well as administrative problems. The willingness of libraries to contribute to a national preservation collection had not been ascertained, nor was it known whether they would be willing to accept responsibility for preserving books for which a given library was listed as holder of a national preservation copy. Nor, as the Librarian of Congess pointed out in his covering letter, was the

procedural process inexpensive.[32]

In the early 1970s, ARL again tried to spell out a practical national strategy for preservation, this time under the auspices of a grant from the U.S. Office of Education. The final report stated that the study was prompted by "the assumption that the general plan incorporated in the 1964 report needed only the addition of operational details and funding for implementation."[33] Views had changed, the author acknowledged, and even though the original objectives were still valid, six years had passed with no action. A problem of scale was involved.

> In moving from research and training to the topic of actual operating programs in libraries, the complexity of the preservation problem becomes apparent. In a sense, it is as if there were two preservation problems, one reducible to specific items or specific categories of material in individual research collections; the other a seemingly unscalable mountain of the millions of volumes in the slowly crumbling collections of older research libraries of the country. In the first case, there is some action and perhaps even progress. Logic would suggest that such progress would lead to improvement in the second case as well, but the change in scale from the first situation to the second seems somehow to undermine the possibility of even a fleeting sense of accomplishment.[34]

To bring the problem down to manageable size, the report includes a number of suggestions for action in the areas of research and education and training. In terms of collective action, however, the proposal shifted from the earlier call for a centralized preservation collection to the idea of a national system of collections. As a first step, it was suggested that ten or fifteen libraries join in a "preservation consortium" to carry out certain specific preservation projects. This would set the stage for the formulation of common preservation procedures and uniform performance standards. Local preservation collections would become the basis for national resources collections, which would result in a shared responsibility. Eventually, a national library corporation might act as the coordinator for the national program. "By not aspiring to preserve everything and concentrating instead on discrete subject areas, some real progress becomes possible," the report concluded.[35]

For all its advances in other areas, at this time technology for preservation had not, it seemed, caught up with the national planning. No efficient, inexpensive method for deacidifying books in bulk had been invented. Optimum economical storage conditions were as yet unknown. Procedures and standards for bibliographic control were still unformulated. Work was proceeding on these items, and until information became available, it appeared that the political and economic questions raised by the LC Brittle Book Project and the collective action suggested by ARL could not be addressed. To this point, CLR had expended approximately $103,000 for work leading toward a national preservation program. Action was, however, temporarily halted.

Library of Congress

As noted earlier, in 1969 the Library of Congress turned its attention to setting up a preservation laboratory, which, in a program of research, would investigate some of the problems that seemed to prevent the building of a coherent national plan. By 1976, with considerable progress made in its own program, LC announced to the American Library Association at its annual conference that it was now prepared to begin the development of a broad-scale national program. The first step was an invitational conference, held in December 1976, the purpose of which was to obtain opinions and recommendations of the library and archival communities on a proposed program. Council funds supported the event.

The library's plan called for a series of actions grouped in three broad categories. First, to preserve those items the intellectual content of which does not warrant more expensive treatment, it proposed a national preservation microfilming center with space for archival storage of master negatives, along with appropriate surveys, standards development, bibliographic control mechanisms, and other procedures that would allow for contributions to the center and retrieval of the items housed within. For those items that ought to be preserved in the original format, the plan proposed a training pro-

gram for conservators, establishment of regional conservation centers and emergency salvage teams, and an improved means of sharing information through national conservation workshops and distribution of training aids. Finally, to ensure that the materials of the future do not follow the route to decay of their forebears, the library recommended provision of low-temperature facilities and microfilming procedures and an effort to persuade papermakers to produce stronger, long-lived paper.

Although the wide-ranging discussion made clear the divergence of opinion on the best way to proceed, the need for action was strongly felt. Warren J. Haas, at that time vice-president and university librarian at Columbia University, closed the conference by saying that "scholars, librarians and archivists do, in fact, have the responsibility to solve this preservation problem. And that responsibility is not conditional—it does not depend on public perception, or amount of money, or anything else. It is our responsibility, and we can either succeed or fail. The rate at which things get done is a function of money; whether or not they are done at all is a function of people."[36] He called for the establishment of a small advisory committee to begin the process of determining a course of action. The Council on Library Resources, he said, would support the meeting expenses of such a group.

The Library of Congress thereupon established an ad hoc Advisory Committee for a National Preservation Program and on June 14, 1977, announced the appointment of a national preservation program officer to coordinate LC's activities. Only two meetings of the committee were held, in June and September of 1977. The group considered the list of possible projects and recommended priorities. At the top of the list were the items considered easiest of accomplishment: timely preparation of LC publications on preservation, LC sponsorship of a series of workshops and seminars, the development of three-month conservation institutes, and production of a series of conservation training aids. At its second meeting the committee unanimously recommended that LC move to convert the *National Register of Microform Masters* to machine-readable form and went on record as favoring the training of more conservators. The group also asked the national preservation program officer to investigate the topic of a cold-storage facility.

Just six months after the initial appointment, the position of national preservation program officer was vacated and has not been refilled. To be sure, the library has continued to operate a National Preservation Program Office, which most recently has issued a newsletter called *National Preservation Report*. The results of LC's research and testing program, directed at problems associated with its own collections, are often useful to all libraries. LC has continued to publish pamphlets containing valuable basic information on conservation techniques, and its staff frequently conduct workshops, make presentations, and consult on problems caused by natural disasters. Some materials used in conservation have been made available commercially after careful testing and experimentation in LC laboratories. The library has been spending $1 million a year each on preservation microfilming and binding. These activities are valuable in themselves. However, no other action on any of the committee's recommendations has been reported. In the last few years, the library also has entered into a period of budget constraint. In the face of the demanding job of preserving its own collections, and for a number of internal, fiscal, and political reasons, the library has been unable to assume the leadership role it had announced.

Current Prospects

Although a lack of fiscal resources and technical procedures, along with a lack of trained manpower, has adversely affected development of a national strategy for preservation, the current lack of leadership and the failure by librarians to assume responsibility are perhaps the most serious impediments to progress. Plainly speaking, academic and research libraries, whose collections comprise the cultural record and which therefore are the most threatened, have historically shown little capacity for collective action. Many important projects have salvaged, and continue to salvage, substantial pieces of the records of history. But

deterioration is occurring at a faster rate than conservation, and the threat that, as one commentator put it, the nineteenth century might become known as "the beginning of the bookless age" remains. Yet events of recent years have engendered hope, rather than despair, for two reasons: a growing awareness of the seriousness of the problem, and a remarkable shift in attitude among academic and research libraries. Advances in technology are also playing a role.

That the message is getting across was clearly documented by Pamela Darling in a recent issue of *Library Journal* in which she cataloged the association meeting programs, courses, institutes, workshops, articles in journals within and outside the profession, and publications that have blossomed since 1976.[37] The problem of manpower is being seriously addressed by, among others, Columbia University's School of Library Service, which is seeking to fund and develop a full-scale academic program for conservators and preservation program administrators. The Resources and Technical Services Division of the American Library Association has created a Preservation of Library Materials Section. But general awareness does not create the capacity for action.

In 1974, four major research libraries —Columbia, Yale, Harvard, and the New York Public Library—formed the Research Libraries Group. Although Harvard withdrew, the group has since enlarged to more than twenty members. Dedicated to "improving the management of the information resources necessary for the advancement of scholarship," the group is an effort "to manage the transition from locally self-sufficient and independent comprehensive collections to a nationwide system of interdependencies that will preserve and enhance our national capacity for serious research in all fields of knowledge and improve our ability to locate and retrieve relevant information."[38] The formation of this group signals a shift in attitude of many research libraries from one of waiting for a savior to one of self-help. And it is this group that may, at last, provide the capacity for joint action.

Why is this group a promising locus for activity? For one thing, RLG members are connected by a fully functioning computerized bibliographic data base, capable of refinement to add the necessary information concerning preservation on an item-by-item basis. Second, the group has been committed from the beginning to the goals of shared resources and cooperative collection development, and preservation is a large factor in both. Third, the group is not waiting for the Library of Congress to take the lead, but views LC as an important partner in reaching its goals. The potential for concerted action clearly is evident.

Nor is the group alone. The Association of Research Libraries is continuing to initiate activities that will assist the preservation cause. Most recently, with the help of an NEH grant, ARL commissioned another study of the bibliographic control of materials in microforms. While gains had been made following the Simonton study, changes in cataloging rules and the growth of machine-readable data bases had made it appropriate to reassess the situation. ARL's objective is "to plan and coordinate North American efforts toward building a machine-readable data base of cataloging records for materials in microform," with particular emphasis given "to facilitating the production and dissemination of analytics for titles published in large microform sets."[39] ARL is involving librarians, microform publishers, representatives of bibliographic utilities, and others to develop the agreements, standards, methods, and mechanisms required. In addition, the ARL Office of Management Studies also received a grant from NEH to develop a self-study process that will enable individual institutions to focus on preservation and its relationships to library processes from a management point of view.

There are other movements as well. At a meeting in June 1980 at Snowbird, Utah, representatives from libraries, archives, historical societies, and museums in eighteen western states agreed on a master plan for preservation and conservation of materials in the West. The plan included, among other items, the creation of a regional conservation clearinghouse in the short term and in the long term, the development of a regional capacity to treat deteriorating materials.

Increased funding possibilities in both federal and private sectors are also playing

a role. The National Endowment for the Humanities has been mentioned several times as providing funding support for preservation projects, and there is evidence of increased interest. NEH's fiscal year 1981 budget carries a line item specifically earmarked for preservation. The Department of Education, through Title II-C of the Higher Education Act, has awarded more than $3 million since 1978 to research libraries for substantial preservation programs. With these funds the Art Institute of Chicago is preserving rare architecture photogravure plates, Harvard is making master microfilm negatives of, among other items, Chinese ephemera, and the University of Alaska is preserving deteriorating materials in its Alaskan and Polar Region Collection. The records program of the National Historical Publications and Records Commission, established in 1974, has pumped additional money into programs for preserving and making accessible valuable archival collections. Several private foundations, notably the Andrew W. Mellon Foundation, have shown increased interest in assessing efforts toward preservation. Already the Mellon Foundation has awarded $750,000 to the New York Public Library, which has had a strong institutional preservation program for years, to develop an on-line data base of microform masters and micropreservation activity. It will be made available to other libraries through the Research Libraries Group.

The council has not been idle, either, in pressing the cause of preservation and in responding to promising programs. A change in the council's funding pattern has limited the resources available for programs in this area, but it has not lessened its interest or concern. CLR has never been able to respond to the needs of individual institutions for preservation of their local collections, nor has it been able to finance large-scale cooperative projects. As in the past, the council looks for programs with multiplier effects.

One example, if it ever comes to pass, would be the establishment of a National Periodicals Center (NPC). The council was involved in the early planning stages of the proposed center. In 1977 at the request of the Library of Congress, CLR began the preparation of a technical development plan that outlined the key operating characteristics, requirements, and funding needed to establish such an institution. A primary objective of the NPC, according to the plan, is its potential contribution to the preservation of periodical material. Its centralized collection of 30,000–60,000 journals would be preserved in perpetuity and its preservation activities would become "an integral and dependable part of a national preservation program."[40] Following publication of the plan in 1978, legislation was introduced into the U.S. Congress to continue the planning for the center.

At the present time, several modest CLR-supported projects focus on a number of aspects of the preservation issue. Early in 1980, CLR joined other funding agents in support of the Library Affairs Conservation Program at Southern Illinois University, Carbondale. The university library has set up a conservation laboratory, headed by a trained conservator, and is developing training programs, workshops, and other activities to assist libraries and other institutions throughout Illinois and the region. In a similar vein, to promote increased awareness of preservation activities and opportunities, CLR awarded a small two-year grant to the University of Wyoming to support direct editorial costs associated with producing the fledgling newsletter *Conservation Administration News*, edited by the university's library director.

To consider the preservation issue fully, however, one must, like Janus, look in opposite directions. Because the retrospective side of the issue is so enormous, it is easy to fail to look ahead to the prospective problem. If steps are not taken to change the way books are made, the retrospective problem becomes exponentially more serious.

As mentioned earlier, an outcry in the 1960s accompanied the reports by Barrow on the extent of the deterioration of library materials and his concurrent discovery that it was possible technically to make a permanent/durable paper at affordable prices. Following the 1960 conference, journal articles and letters to the editor began to call on paper manufacturers to produce acid-free papers and publishers to use them. In 1964,

the University of Oklahoma Press announced its intention of indicating in each book the life expectancy of the paper used. In 1968 an editorial in *Publishers Weekly* reported two promising trends.[41] At least two paper mills had converted to acid-free processes and the McGraw-Hill Company announced that it would print all of its books on alkaline stock. Although the ALA Joint Committee on Permanent/Durable Paper proved ineffectual, in 1967 another joint committee, this time of the American Book Publishers Council and ALA's Resources and Technical Services Division, brought up the matter again and sent out a questionnaire to ascertain the extent of use of the paper among publishers. But by 1970, the hue and cry, such as it was, seemed again to die down. A shortage of supply of paper in the late 1970s did not help revive general interest.

In his Bowker Memorial Lecture in November 1977, Herbert S. Bailey, Jr., pointed once again to the need for heightened awareness among publishers of the problem of paper permanence. The fact that there has been some improvement in paper-manufacturing processes and in the number of alkaline mills has, he said, perhaps caused the problem to be forgotten. "In a recent study it was found that most publishers' production managers did not know whether they were using permanent/durable paper," he reported. "Their minds were on other things such as appearance, printability, opacity, texture, bulk, and price."[42] To help remind publishers and ensure the longevity of the works it sponsors, the National Historical Publications and Records Commission in 1978 issued standards that must be met by papers used in NHPRC publications. By 1979, with interest in the preservation issue again mounting, the time seemed right to attack the prospective aspects once more.

On May 14, 1979, CLR and the Andrew W. Mellon Foundation invited about twenty individuals with knowledge of paper manufacturing, publishing, and library book preservation to contribute to a discussion in New York. The participants sought to gather information about book paper and its use and to identify ways to address the prospective aspects of the preservation problem. Following that meeting, a Committee on Production Guidelines for Book Longevity was formed to carry on the discussion and plan a program of action. The committee determined that its aim was to establish a basic set of guidelines to assure reasonable permanence and acceptable durability and to consider the relation of the guidelines to the ways in which books are used. In essence, the committee is again seeking to raise awareness of the prospective problem among all those concerned and to develop practical, realistic methods of dealing with it. The report of the committee was expected in late 1980.

The problem of preservation transcends national borders, of course. In an attempt to focus attention at an international level, the council awarded funds to the International Federation of Library Associations and Institutions (IFLA) for several projects, among them an examination of the problems associated with prospective preservation. IFLA will seek to give preservation greater visibility and will address such questions as whether special manufacturing of library copies should be advocated and what will be the role of microforms in preserving materials for future use. The special climatic conditions to which paper is exposed in Third World countries will also be studied. At an international conference in Bellagio, Italy, in May 1980, the International Council on Archives agreed to participate in the IFLA venture.

But there is more, much more, to be done. Although two processes for mass deacidification of books have been developed, one is still in the laboratory phase and the other, while available commercially, has received little attention. Recent developments in computer technology and the emergence of videodiscs and their storage capabilities have led to the question of whether there are suitable applications of these technologies for preservation purposes. Columbia University's projected training program certainly will not be able to supply the total number of specialists needed to address the preservation problems of individual institutions. And while there is substantial movement toward developing the capacity for collective action, and an apparent increase in funding pros-

pects, there still is no national program or system for preservation.

The council will continue to monitor events in this crucial area and, within its limited resources, to supply funding for projects that hold promise of progress toward solutions. When it can act as a catalyst in helping to identify and clarify the issues at stake or coordinate disparate activities, it will. But in the end, commitment and responsibility for leadership must be assumed by those who have custody of the collections, with assistance from scholars, university officials, publishers, papermakers, and others engaged in creating and using the records of humankind.

References

1. James W. Henderson, "Foreword," in John P. Baker and Marguerite C. Soroka, eds., *Library Conservation: Preservation in Perspective* (Stroudsburg, Pa.: Dowden, Hutchinson & Ross, 1978), p.vi.
2. Edwin E. Williams, "Deterioration of Library Collections Today," in John P. Baker and Marguerite C. Soroka, eds., *Library Conservation: Preservation in Perspective* (Stroudsburg, Pa.: Dowden, Hutchinson & Ross, 1978) p.18.
3. Verner W. Clapp to Bernard G. Barrow, Aug. 19, 1968, Project Files, Council on Library Resources, Washington, D.C. Also, in 1948, this entry appears in Clapp's diary: "Bill Barrows [*sic*] wants a grant for research in old paper," Diaries of Verner W. Clapp, Clapp Papers, Library of Congress, Washington, D.C.
4. Randolph W. Church, "Is There a Doctor in the House?" *Publishers Weekly* 175:76 (Jan. 5, 1959).
5. Randolph W. Church, ed., *Deterioration of Book Stock, Causes and Remedies: Two Studies on the Permanence of Paper* (Richmond, Va.: Virginia State Library, 1959), p.16.
6. W. J. Barrow and Reavis C. Sproull, "Permanence in Book Papers," *Science* 129:1079 (1959).
7. A useful discussion of the history of papermaking and the effects of technological processes on durability is found in Verner W. Clapp, "The Story of Permanent/Durable Book-Paper, 1115–1970," *Scholarly Publishing* 2:107–24, 229–45, 353–67 (1971).
8. W. J. Barrow Research Laboratory, *Strength and Other Characteristics of Book Papers, 1800–1899* (Permanence/Durability of the Book, no.5 [Richmond, Va.: The Author, 1967]).
9. Randolph W. Church, ed., *The Manufacture and Testing of Durable Book Papers: Based on the Investigations of W. J. Barrow* (Richmond, Va.: Virginia State Library, 1960), p.23–27.
10. *Permanent/Durable Book Paper*, summary of a conference held in Washington, D.C., Sept. 16, 1960 (Richmond, Va.: Virginia State Library, 1960), p.15.
11. Lee E. Grove, "Paper Deterioration—An Old Story," *College & Research Libraries* 25:365 (1964).
12. *Permanent/Durable Book Paper*, p.28.
13. Randolph W. Church to ALA Joint Committee on Permanent/Durable Paper, Feb. 5, 1962, Verner W. Clapp Papers, Library of Congress, Washington, D.C.
14. Forrest F. Carhart, Jr., to Fred C. Cole, Sept. 26, 1968, Project Files, Council on Library Resources, Washington, D.C.
15. Council on Library Resources, *13th Annual Report* (Washington, D.C.: The Council, 1969), p.35.
16. W. J. Barrow to Verner W. Clapp, Aug. 16, 1967, Project Files, Council on Library Resources, Washington, D.C.
17. Leo Friedman, director, Division of Pharmacology and Toxicology, Food and Drug Administration, to R. N. Dupuis, Nov. 28, 1969, Project Files, Council on Library Resources, Washington, D.C.
18. Arno Roessler to R. N. Dupuis, Sept. 2, 1970, Project Files, Council on Library Resources, Washington, D.C.
19. Minutes of meeting on program of W. J. Barrow Research Laboratory, July 29, 1969, Project Files, Council on Library Resources, Washington, D.C.
20. Bernard F. Walker, "Morpholine Deacidification of Whole Books," in John C. Williams, ed., *Preservation of Paper and Textiles of Historic and Artistic Value* (Washington, D.C.: American Chemical Society, 1977), p.85–86.
21. Robert C. Taylor to Carl M. Spaulding, July 11, 1977, Project Files, Council on Library Resources, Washington, D.C.
22. Barrow Research Laboratory, "Specifications for Permanent/Durable Book Papers," in Clark W. Nelson, ed., "Technical Notes," *American Archivist* 38:405–16 (1975).
23. Clapp to B. G. Barrow, Aug. 19, 1968, Project Files, Council on Library Resources, Washington, D.C.

24. Council on Library Resources, *21st Annual Report* (Washington D.C.: The Council, 1977), p.45.
25. Richard D. Smith, "New Approaches to Preservation," *Library Quarterly* 40:143 (1970).
26. *Collection of Materials on the Preservation of Library Resources*, no.2, ed. L. G. Petrova; no.3, ed. L. A. Belyakova and O. V. Kozulina; tr. from the Russian (Jerusalem: Israel Program for Scientific Translations, 1964); D. M. Flyate, ed., *Preservation of Documents and Papers*, tr. from the Russian (Jerusalem: Israel Program for Scientific Translations, 1968); *New Methods for the Restoration and Preservation of Documents and Books*, ed. N. Ya. Solechnik, tr. from the Russian (Jerusalem: Israel Program for Scientific Translations, 1964).
27. For a detailed history of cooperative newspaper microfilming programs, see John Y. Cole, "Developing a National Foreign Newspaper Microfilming Program," *Library Resources & Technical Services* 18:5–17 (1974).
28. Norman J. Shaffer, "Study to Develop a National Foreign Newspaper Microfilm Program: Final Report" (Paper presented at the meeting of the Foreign Newspaper Microfilm Committee, Association of Research Libraries, Detroit, June 30, 1970), p.10–11.
29. Edwin E. Williams, "Magnitude of the Paper Deterioration Problem as Measured by a National Union Catalog Sample," *College & Research Libraries* 23:543 (1962).
30. Gordon R. Williams, "The Preservation of Deteriorating Books," *Library Journal* 91:55 (1966).
31. James E. Skipper to Verner W. Clapp, Jan. 18, 1966, Project Files, Council on Library Resources, Washington, D.C.
32. L. Quincy Mumford to Douglas Bryant, Dec. 14, 1967, Project Files, Council on Library Resources, Washington, D.C.
33. Warren J. Haas, *Preparation of Detailed Specifications for a National System for the Preservation of Library Materials*, Final Report, Project No. 0-8004, U.S. Office of Education (Washington, D.C.: Association of Research Libraries, 1972), p.2.
34. Ibid., p.8.
35. Ibid., p.24.
36. *Proceedings of the Planning Conference for a National Preservation Program Held at the Library of Congress in Washington, D.C., on December 16 and 17, 1976* (Washington, D.C.: Library of Congress, 1980), p.122.
37. Pamela W. Darling, "Preservation: Today on a Shoestring, Tomorrow. . . . ?" *Library Journal* 105:781–85 (1980).
38. Research Libraries Group, Inc., "An Introduction to the Research Libraries Group, Inc." (Stanford, Calif.: The Group, 1980), p.1.
39. "Microform Project Underway," *Association of Research Libraries Newsletter*, no.99:10–11 (Nov. 30, 1979).
40. Council on Library Resources, Inc., *A Technical Development Plan for a National Periodicals Center* (Washington, D.C.: The Council, 1978), p.15.
41. "More Pleas for Permanent Papers," *Publishers Weekly* 193:69 (March 4, 1968).
42. Herbert S. Bailey, Jr., *The Traditional Book in the Electronic Age* (New York: Bowker, 1978), p.17.

Bibliography of Items Resulting from or Related to CLR-Supported Programs, 1956–80

Applebaum, Edmond L. "Implications of the *National Register of Microform Masters* as Part of a National Preservation Program," *Library Resources & Technical Services* 9:489–94 (1965).

Auerbach, Sylvia. "Coming: Books That Won't Crumble," *Economics and Business Bulletin of the School of Business Administration, Temple University* 16:26–28 (March 1964).

Barrow, W. J. "An Accelerated Aging Study of Several Writing Papers: Re-evaluation of Data," *TAPPI* 47:105–7 (1964).

———. "Acidity: An Undesirable Property in Paste and Mending Tissue," *American Archivist* 30:190–93 (1967).

———. "Archival File Folders," *American Archivist* 28:125–28 (1965).

———. *The Barrow Method of Restoring Deteriorated Documents*. Richmond, Va.: Virginia State Library, 1965.

———. "Deacidification and Lamination of Deteriorated Documents, 1938–63," *American Archivist* 28:285–90 (1965).

———. "Establishing Least Squares Regression Lines for Data of Aged Paper," *TAPPI* 45:209A–10A (1962). Supp.

———. "Hot vs. Cold Extraction Methods for Making a pH Determination," *TAPPI* 46:468–72 (1963).

———. "New Device Tests Performance of Library Bindings," *Book Production* 79:60–62 (March 1964).

———. *Permanence and Durability of Library Catalog Cards*. (LTP Publication no.3) Chica-

go: American Library Assn., Library Technology Project, 1961.

Barrow., W. J., and Carlton, Ann M. "Durability of Three Current Laminating Tissues," *American Archivist* 30:526–29 (1967).

———. "Permanence of Laminating Tissue," *American Archivist* 31:88–91 (1968).

Barrow, W. J., and Sproull, Reavis C. "Permanence in Book Papers," *Science* 129:1075–84 (1959).

W. J. Barrow Research Laboratory. *Permanence/Durability of the Book*. Richmond, Va.: W. J. Barrow Research Laboratory, 1963–74.

I. *A Two-Year Research Program*. 1963.
II. *Test Data of Naturally Aged Papers*. 1964.
III. *Spray Deacidification*. 1964.
IV. *Polyvinyl Acetate (PVA) Adhesives for Use in Library Book-Binding*. 1965.
V. *Strength and Other Characteristics of Book Papers, 1800–1899*. 1967.
VI. *Spot Testing for Unstable Modern Book and Record Papers*. 1969.
VII. *Physical and Chemical Properties of Book Paper, 1507–1949*. 1974.

———. "Specifications for Permanent/Durable Book Papers," in Clark W. Nelson, ed., "Technical Notes," *American Archivist* 38:405–16 (1975). Also available from ERIC (ED 104 345).

Blum, Fred. "The National Register of Microfilm [*sic*] Masters (NRMM)," *Microcosm* 12:3 (June 1967).

Carhart, Forrest F., Jr. "Performance Standards in Library Binding," *Book Production* 79:74 (Jan. 1964).

Carlton, Ann M. "Aging of Paper," in Kenneth W. Britt, ed., *Handbook of Pulp and Paper Technology*, p.709–14. 2d ed. New York: Van Nostrand, 1970.

Church, Randolph W., ed. *Deterioration of Book Stock, Causes and Remedies: Two Studies on the Permanence of Paper*; conducted by W. J. Barrow. Richmond, Va.: Virginia State Library, 1959.

———. "Is There a Doctor in the House?" *Publishers Weekly* 175:76, 78–80 (Jan. 5, 1959).

———, ed. *The Manufacture and Testing of Durable Book Papers;* based on the investigations of W. J. Barrow. Richmond, Va.: Virginia State Library, 1960.

———. "Perish the Paper, Perish the Book, Perish the Thought: An Inquiry," *Publishers Weekly* 172:54–58 (Sept. 2, 1957).

Clapp, Verner W. " 'Permanent/Durable' Book Papers," *ALA Bulletin* 57:847–52 (1963).

———. "Permanent/Durable Book Papers," *Book Industry* 1:28–31, 52 (Dec. 1964).

———. "The Story of Permanent/Durable Book-Paper, 1115–1970," *Scholarly Publishing* 2:107–24, 229–45, 353–67 (1971).

Collection of Materials on the Preservation of Library Resources; no.2, ed. L. G. Petrova; no.3, ed. L. A. Belyakova and O. V. Kozulina; tr. from the Russian. Published pursuant to an agreement with the National Science Foundation and the Council on Library Resources. Jerusalem: Israel Program for Scientific Translations, 1964.

Cunha, George Martin. "National Trends in Cooperative Approaches to Conservation," *PLA Bulletin* 28:226–31 (1973).

Dabney, Virginius. "New Ways to Permanent Files," *Saturday Review*, May 9, 1964, p.87–88.

Darling, Pamela W. "National Planning for Preservation in the United States," *Restaurator* 2:205–13 (1978).

Development of Performance Standards for Binding Used in Libraries, Phase II: Report on a Study Conducted by Library Technology Project. Chicago: American Library Assn., 1966.

Development of Performance Standards for Library Binding, Phase I: Report of the Survey Team. Chicago: American Library Assn., Library Technology Project, 1961.

Duckett, Kenneth W. *Modern Manuscripts: A Practical Manual for Their Management, Care, and Use*. Nashville, Tenn.: American Association for State and Local History, 1975.

Dupuis, R. N.; Kusterer, J. E., Jr.; and Sproull, R. C. "Evaluation of Langwell's Vapor Phase Deacidification Process," *Restaurator* 1:149–64 (1970). Also in *Library of Congress Information Bulletin* 29:A41–43 (June 4, 1970).

"Evaluation of GBC [General Binding Corporation] Laminator," *ALA Bulletin* 56:56–57 (1962).

Flyate, D. M., ed. *Preservation of Documents and Papers;* tr. from the Russian. Published pursuant to an agreement with the U.S. Department of Commerce, the National Science Foundation, and the Council on Library Resources, Inc. Jerusalem: Israel Program for Scientific Translations, 1968.

Ford, Stephen. "The Need for New Standards for Library Binding," *Library Resources & Technical Services* 5:315–21 (1961).

Foster D. Snell, Inc. "Microfilm Rejuvenation: An Evaluation of Three Treatment Services," *Library Technology Reports*, Sept. 1973.

[Francis, William.] "Rags to Riches: The Story of Virginia Papermaking," *Arts in Virginia* 4:3–26 (Spring 1964).

Grove, Lee E. "Adhesive Bookbinding: A Practice Reviewed," *Library Resources & Technical Services* 6:143–60 (1962).

———. "The Conservation of Paper," *Museum News* 42:15–20 (Oct. 1963).

———. "Paper Deterioration—An Old Story," *College & Research Libraries* 25:365–74 (1964).

———. "Predictability of Performance in 'Perfect' Library Bindings," *College & Research Libraries* 22:341–44 (1961).

Haas, Warren J. "New York Conference on Book Paper and Book Preservation," *Library of Congress Information Bulletin* 38:298–300 (Aug. 3, 1979). Accounts also appear in *National Preservation Report* 1:31–35 (Aug. 1979), and *CLR Recent Developments* 7:2–3 (Aug. 1979).

Hey, Margaret. "Paper Bleaching: Its Simple Chemistry and Working Procedures," *Paper Conservator* 2:10–23 (1977).

———. "The Use of the Scanning Electron Microscope in Document Restoration Problems," *Restaurator* 1:233–44 (1970).

"History of the Barrow Lab, or, The Thirty Years That Revolutionized Paper," *Publishers Weekly* 189:72–80 (April 4, 1966).

Horton, Carolyn. *Cleaning and Preserving Bindings and Related Materials*. 2d ed., rev. (LTP Publication no.16) Chicago: American Library Assn., Library Technology Program, 1969.

Kelly, George B., Jr. "Practical Aspects of Deacidification," *Bulletin of the American Group, International Institute for Conservators* 13:16–28 (1972). Also in *Archives et Bibliotheques de Belgique*, Numero Special 12:91–105 (1974).

Kusterer, James E., Jr. "Surface pH Determinations of Paper," *Industrial Applications Research Data Sheet*, pH-7622. Fullerton, Calif.: Beckman Scientific Instruments Division, n.d.

"Manuscript-Marking Ink," *ALA Bulletin* 56:361 (1962).

"Maximum Safe pH," in Clark W. Nelson, ed., "Technical Notes," *American Archivist* 38:65–66 (1975).

Middleton, Bernard C. *The Restoration of Leather Bindings*. (LTP Publication no.18) Chicago: American Library Assn., Library Technology Program, 1972.

New Methods for the Restoration and Preservation of Documents and Books; ed. N. Ya. Solechnik; tr. from the Russian. Published pursuant to an agreement with the National Science Foundation and the Council on Library Resources. Jerusalem: Israel Program for Scientific Translations, 1964.

"The Paper Man," *Richmond News Leader*, June 8, 1963, p.3.

Permanent/Durable Book Paper. Summary of a conference held in Washington, D.C., Sept. 16, 1960. Sponsored by the American Library Association and the Virginia State Library. Richmond, Va.: Virginia State Library, 1960.

Piez, Gladys T. "Archival Containers—A Search for Safer Materials," *American Archivist* 27:433–38 (1964).

———. "Film Coatings," *ALA Bulletin* 58:237–38 (1964).

———. "Film Coatings—Do They Really Protect Microfilm?" *National Micro-News*, no.67:125–39 (Dec. 1963).

———. "Laminator for Libraries," *ALA Bulletin* 55:269–75 (1961).

———. "Some Library Adhesives—A Laboratory Evaluation of P.V.A.'s [polyvinyl acetates]," *ALA Bulletin* 56:838–43 (1962).

Poole, Frazer G. "Performance Standards in Library Binding," *Book Production* 75:67–68 (June 1962).

"The Preservation Research Program of the Library of Congress," Preservation Supplement 72–73, *Library of Congress Information Bulletin* 31: Appendix 165–68 (Sept. 15, 1972).

"A Report on a Planning Conference for a National Preservation Program, Washington, D.C., December 16–17, 1976," *Library of Congress Information Bulletin* 36:129–31 (Feb. 18, 1977).

"Research Is Arresting the Rapid Deterioration of Books," *New Scientist* 19:138 (July 18, 1963). London.

Roberson, David D. "The Evaluation of Paper Permanence and Durability," *TAPPI* 59:63–69 (1976).

Shaffer, Norman J. "Library of Congress Pilot Preservation Project," *College & Research Libraries* 30:5–11 (1969).

———. "A Report on the Second Meeting of the Ad Hoc Advisory Committee for a National Preservation Program," *Library of Congress Information Bulletin* 36:841–42 (Dec. 23, 1977).

Simonton, Wesley. "The Bibliographical Control of Microforms," *Library Resources & Technical Services* 6:29–40 (1962).

"The Slow Fire Consuming Our Books," *Hercules Chemist*, no.46:19–22 (Feb. 1963).

Smith, Richard D. "A Comparison of Paper in Identical Copies of Books from the Lawrence University, the Newberry, and the New York Public Libraries," *Restaurator*, supp. no.2, 1972.

———. "The Extension of Book Life," *Library Binder* 17:36–37, 39–40 (Dec. 1970).

———. "Guidelines for Preservation," *Special Libraries* 59:346–52 (1968).

———. "New Approaches to Preservation," *Library Quarterly* 40:139–71 (1970).

———. "The Nonaqueous Deacidification of Paper and Books." Ph.D. dissertation, Univ. of Chicago, 1970.

———. "Paper Impermanence as a Consequence of pH and Storage Conditions," *Library Quarterly* 39:153–95 (1969).

"Test Devices Used in Binding Standards," *Library Technology Reports*, July 1967.

Walker, Bernard F. "Morpholine Deacidification of Whole Books," in John C. Williams, ed., *Preservation of Paper and Textiles of Historic and Artistic Value*, p.72–87. (Advances in

Chemistry Series, no.164) Washington, D.C.: American Chemical Society, 1977.

Weinstein, Robert A., and Booth, Larry. *Collection, Use, and Care of Historical Photographs*. Nashville, Tenn.: American Association for State and Local History, 1977.

Williams, Edwin E. "Magnitude of the Paper-Deterioration Problem as Measured by a National Union Catalog Sample," *College & Research Libraries* 23:499, 543 (1962).

Williams, Gordon R. "The Preservation of Deteriorating Books," *Library Journal* 91:51–56, 189–94 (1966).

Williams, John C., and Kelly, George B., Jr. "Research on Mass Treatments in Conservation," *Bulletin of the American Institute for Conservation* 14:69–77 (1974).

———, and Krasnow, Marta R. "Folding Endurance and Tensile Strength of Paper," *Bulletin of the American Group, International Institute for Conservators* 14:25–41 (1973).

PAUL METZ AND ELIZABETH A. SCOTT

A Proposed Staffing Formula for Virginia's Academic Libraries

Formulas and standards play a needed role in the allocation of library resources, but it is difficult to devise formulas that accurately reflect the various factors that shape a library's needs. This report summarizes the means by which a subcommittee of the Virginia Library Advisory Committee devised a proposed staffing formula for its academic libraries. The subcommittee charged with devising a new formula reviewed past efforts as a means of determining criteria any new formula should meet. Based on this review and on its own research, the committee devised a draft formula, which is discussed.

THE USE of formulas and standards to allocate or to evaluate resources for academic libraries has received a good deal of attention in recent years. This particular pendulum seems to describe a larger arc than most, with formulas sometimes popular in both theory and practice and at other times mentioned rarely, and then only critically.

Since there are strong arguments to be made both for and against the use of objective bases for determining levels of acquisitions, staff, or funding, this ambivalence is understandable. On the one hand, formulas are seen as objective and apolitical, and as a means of ensuring continuity and rational planning. On the other hand, formulas are criticized for their procrustean tendency to ignore significant local differences and for the danger that they may actually be used more as ceilings, which set maximum resource levels, than as floors, with unfortunate results, especially when enrollments decline.[1,2] These dangers are sometimes avoided by the use of standards explicitly intended to determine minimal resource levels rather than formulas that would determine allocations with some precision.

Although formulas and standards to determine collection levels have received the most attention, there has been no lack of effort to devise objective means to determine staffing levels, as well. While the Association of College and Research Libraries has declared that "As such factors (e.g., the number of library units, collection size, and circulation volume) vary widely from one institution to another, no single model or formula can be provided for developing an optimum staff size," it has outlined in a general sense qualitative criteria for what should be expected of a library staff.[3] Other agencies have not been so reluctant about formulas, and it is interesting that all of the formulas devised to date have been developed to serve states or large city systems of higher education, a level where the need for an apolitical and equitable approach is most keenly felt.

New York City and the states of New York, Colorado, Washington, Oregon, Florida, and California have all experimented with staffing formulas, though it is not clear from the literature that all have been applied.[4-8] All of these formulas have used enrollments as a key input to the formulaic equation, but beyond this similarity they have differed in a number of significant ways. Some attempt to determine levels for

Paul Metz is user services librarian, Virginia Polytechnic Institute and State University, Blacksburg; Elizabeth A. Scott is assistant to the president, Dabney S. Lancaster Community College, Clifton Forge, Virginia.

technical services, public services, and administration while others directly determine the bottom line; some use different constants or different factor weights depending on the level of the institution whose staff is being determined, in effect establishing different formulas for community colleges, four-year colleges, and universities; and some use faculty levels, collection size, or acquisitions rates as input factors while others disregard these parameters. Finally, some, but not all, of the formulas reflect the diminishing demands of larger enrollments or other parameters on library resource levels, establishing sliding scales for the relationships between input parameters and staff levels.

The state of Virginia has used a series of formulas as library staffing guidelines for budget requests from institutions of higher education. It should be emphasized that the current guidelines are indeed guidelines and are not applied rigidly. Adjustments to the guideline staffing levels are made on both the state and the local levels. In making adjustments to the guideline levels, a general consideration has been given to the recognition that their strict application would yield too few positions for the larger institutions and for community colleges with more than one campus.[9,10] Those in present use are based on formulas developed by the CUNY system and are supplemented by a prescription that the ratio of nonprofessionals to professionals should be 3:2. Nonstudent library positions for each campus are derived as follows:

Community colleges:

STAFF = 3 + Student FTE/500 + Faculty FTE/50

Four-year colleges:

STAFF = 9 + Student FTE/400 + Faculty FTE/40

Comprehensive universities:

STAFF = 9 + Undergraduate FTE/400 + Graduate FTE/100 + Faculty FTE/35

The state's two ARL institutions do not use these formulas but instead determine their funding requests by comparisons with the size of the staffs in the ARL libraries that are their peers in terms of collection size. The result, then, is that there are four yardsticks that affect staff levels.

In search of a better means for determining staff needs, the Library Advisory Committee of the State Council of Higher Education in Virginia appointed an ad hoc Subcommittee on Staffing to investigate alternative approaches. This subcommittee proceeded to review the literature, to outline goals for a revised approach, and to make recommendations for a new formula. As a means of discovering how staff were actually performing the various library functions and how needs were being met in the differing colleges, the subcommittee sent a survey to the library directors of the thirty-nine state academic institutions in July 1978. The general conclusion of the survey was that few institutions fulfill the guidelines and that the number of existing positions is no greater than what is needed, and is apparently less in many cases. This conclusion was based on both subjective data (the assertion by the great majority of directors that their staffing levels were insufficient to provide adequate service) and objective data, most notably the demonstration that many library service points were unattended during long portions of library hours, that some libraries could offer no reference service during certain hours, and that student labor was being enlisted for functions that should probably be assigned to full-time professional or paraprofessional staff.[11]

Goals for Formula Construction

Since the number of positions called for by the official guidelines had not been funded, the subcommittee thought that it would be unreasonable to conclude that the present formulas were overly generous until the staff levels they called for had been fully funded and the results of this practice determined. Because the problems unearthed by the survey seemed to have been more severe in the smaller institutions and because those same institutions were more seriously understaffed with respect to the current guidelines, the subcommittee also determined that its formula should reflect, not the existing distribution of staff across institutional types, but the distribution called for by current guidelines. Together, these observations served as the bases for the first of six precepts that the subcommittee adopted for its work:

1. The new formula should call for essentially the same staff levels within each type of institution as is called for by current guidelines, both for the system as a whole and within each type of institution.

The first precept grows out of considerations that may be peculiar to the Virginia situation. The remaining five of the subcommittee's precepts, however, grew out of an examination of what functions a staffing formula should serve and out of a review of how previous formulas have succeeded or failed in meeting their goals. Accordingly, a step-by-step discussion of the subcommittee's self-imposed guidelines may provide a convenient means of examining the entire question of what makes for a good staffing formula. Each of the remaining precepts is therefore listed and discussed below.

2. A staffing formula should be based on unambiguous, readily available statistical measures.

None of the advantages of a formula—convenience, objectivity, the hope that levels set by formula will be subject to less special pleading than levels set by other means—applies if the input parameters are ambiguous or cannot be readily obtained. Ideally, input parameters should be drawn from data already collected, such as HEGIS (Higher Education General Information Survey) statistics.

3. A staffing formula should be based on factors that measure demands on the library, and not on internal processes within the library's control.

In order to promote efficiency and to retain its credibility, a formula must not be based on any procedural elements within the control of the library administration. It would be possible, for example, to base a formula in part on the length of time devoted to authority searching and cataloging per new title, or on the number of catalogs maintained, or on the number of service desks regularly staffed. But such a formula could establish a feedback loop from questionable library procedures to staffing levels, perpetuating existing staff levels and rewarding inefficient practices. On the other hand, if a library's staff level is determined by external demands, more efficient libraries will be rewarded for their economies. Instead of having their "idle" staff taken away by an intrusive bureaucracy, they will be free to assign any staff time gained through efficiencies to new service uses.[12]

Some potential factors fall on the border line between "demand" and "process" factors, but must be rejected in any event because they do not satisfy the second precept. Circulation counts, for example, are not calculated in the same way in every library; some libraries count renewals as equivalent to first-time circulations, while others do not. Moreover, circulation volume is partly an outcome of library policies, such as the length of circulation periods or the extent of the library's reliance on reserve reading.

4. If possible, there should be a single formula, rather than a series of formulas, applied to different institutional types.

This precept is based on the goals of conceptual clarity and ease of application for a formula and reflects a belief that the important sources of variation among types of institutions are not necessarily more significant than the sources of variation among institutions of the same type. The precept is also based on the observation that institutions can change categories. If a four-year college is upgraded to a comprehensive university and finds that its formula-driven staff level has dramatically changed, this is an indication that the formula imposes arbitrary and inappropriate staffing levels. This unfortunate tendency is exacerbated if multiple formulas are heavily based on the use of different additive constants (rather than different factor weights, or multipliers). The use of constants tends to homogenize staffing levels within institutional types, carrying the risk that smaller institutions within a type will be overstaffed while larger institutions are relatively deprived.

5. The formula should achieve a close statistical fit with existing staffing levels.

This precept does not speak to the total number of positions that the formula should call for (precept 1), but rather to the desired statistical relationships between actual and formula-predicted staff levels. The precept proceeds from the assumption that factors that influence the effective use of library staff—initiative, careful management, or even mismanagement—are probably ran-

domly distributed across types of institutions and across individual institutions. If this is true, then a formula that closely correlates with existing staff levels will succeed in introducing rationality and in rewarding efficiency, and will do so without imposing a systematic redistribution of staff based on any arbitrary theory about which institutions require more staff.

6. The formula should be based on a balanced variety of parameters, and should not be too heavily dependent on enrollment levels or on other measures highly correlated with enrollments.

Both a desire for an accurate formula and political pragmatism provide rationales for this precept. It is unrealistic to believe that any one input parameter can be relied on to yield valid staff levels for academic libraries whose environments vary in so many other important respects. Certainly the greatest demands within an academic library system do not always come from the departments with the highest enrollments. Politically, it is unwise to endorse a staff formula that is heavily based on a parameter whose future levels are unknown, with either a steady state or absolute decreases a realistic possibility.[13]

Proposed Virginia Formula

Given the constraints outlined above, the subcommittee identified a set of parameters that reflect demands on the library and for which unambiguous statistics are readily available. The following factors were identified: undergraduate FTE, graduate student FTE, faculty FTE, volumes held, volumes added (gross), and the number of distinct library sites that serve *either* a physically discrete campus *or* a professional program.

Undergraduates, graduates, and faculty are common input parameters for staffing formulas. They clearly represent external demands on the library. For most state systems, including that of Virginia, funding for colleges and universities is based in large measure on enrollments, so that a staffing formula with this basis is apt to be generally in line with overall institutional funding. Each of the three factors measures a somewhat different facet of external demand, not only because graduate students and faculty make heavier demands on the library but also because the proportion of graduate students and faculty on campus is a useful index of the overall nature of the academic enterprise. That is, large graduate enrollments and high faculty-to-student ratios may be useful indexes of a strong research orientation that will place heavy demands on the library.

The remaining factors are not so commonly used in staffing formulas. Perhaps the custodial role, rather than that of direct service, is easily overlooked in library planning because it has little appeal. In any event, the human resources required to maintain large collections and the buildings that house them, to shelf-read, periodically to move, and to provide reference access to large numbers of books are not to be discounted. Baumol and Marcus, in their well-known study, have shown that collection size bears the single strongest statistical relationship to staff levels, a finding that Metz and Halstead have independently replicated.[14-16]

The relationship between additions to the collection and staff is obvious. The number of new titles added to the collection is a chief determinant of needs for technical services staff. Gross volumes added (rather than net, which would reflect discards) was chosen as the most appropriate, readily available statistic to measure this factor.

The selection of sites as the final factor stemmed from the fact that one of the most common criticisms of the previous Virginia formulas had been their insensitivity to this parameter.[17] Apart from the fact that dispersion of library sites increases overall user demand, keeping each site open and operating calls for a certain minimum fixed expenditure of human resources.

The use of physical sites as an input parameter does raise problems of definition that require careful negotiation. Sites are only ambiguously a "demand" factor, as the establishment of a new site often represents a policy decision made by the library administration. Certainly any staffing formula should not encourage the undue proliferation of branch libraries. The subcommittee sought to solve this dilemma by defining a site, for the purpose of the formula, as "any physically separate campus of the same institution, or a physically separated location

TABLE 1

RATIO OF INPUT PARAMETERS TO STAFF LEVELS

	Undergrad. FTE	Grad. FTE	Faculty FTE	Holdings	Volumes Added	Sites
Universities	77:1	19.1:1	7.9:1	7863:1	447:1	0.021:1
Four-year colleges	160:1	8.8:1	11.3:1	8043:1	415:1	0.052:1
Community colleges	210:1	—	14.8:1	4400:1	274:1	0.152:1
Entire system	120:1	13.2:1	9.9:1	7203:1	406:1	0.053:1

Note: There are five universities, ten four-year colleges, and twenty-four community colleges in the Virginia system.

of a professional school responsible for its discipline offering within the institution and for earning separate accreditation."[18]

In deriving weights to relate the input parameters to staff levels, the subcommittee made no effort to establish empirically the precise contribution that each makes to the use of staff time. Two approaches to this type of solution are possible, but each has serious flaws. Time study analyses can be and have been used to determine the relationship of various factors to time expenditure, but this requires very careful and expensive studies whose outcomes inevitably depend on key issues of interpretation.[19] Statistical analysis poses an alternative methodology that, while useful, is ultimately limited by the extreme multicollinearity among library measures, where correlations among collection size, enrollments, faculty size, and other parameters are often as high as 0.90.[20] The subcommittee did in fact experiment with the use of ridge regression, a form of multiple regression that takes explicit account of multicollinearity, and was able to derive a formula with highly satisfactory "goodness of fit" to existing staff levels. Several draft formulas developed in this manner satisfied all of the subcommittee's precepts, but this approach was ultimately rejected because the weights it yielded were wildly counterintuitive and would therefore be generally unpalatable and politically unacceptable. No formula could be found through this means that did not include at least one *negative* coefficient, seemingly punishing a library for the size of its constituency or of its collection.*

The methodology actually used was an interactive trial-and-error process of finding the factor weights that would yield a formula most in line with the subcommittee's goals. First consideration went to satisfying precepts one and five, calling for a formula that would give each category of institution about the same total level of staff as the old formula while achieving a high statistical fit with existing staff levels for individual institutions.

The information in table 1 provides the basis for manipulating the weights to meet the various constraints. The table reflects the ratio of each input parameter to the number of library staff, within each category of institution and for the thirty-nine colleges and universities as a whole.

Using these data as a basis for adjusting the weights (which in this formula take the form of denominators), the subcommittee arrived at the formula given below:

Library staff = Undergraduate FTE/1,000 + Graduate FTE/100 + Faculty FTE/33 + Volumes Added/5,000 + Holdings/22,000 + (2) Sites

For any given parameter, a heavy factor weighting (small denominator) will yield more positions for those institutions for which the ratio of the parameter to staffing is high, while making a smaller contribution to staff levels for those institutions for which the same ratio is low. To the extent that a formula assigns staff on the basis of undergraduate enrollments or faculty, then, the smaller institutions will benefit. The relationship is reversed for the weighting of holdings and acquisitions, which benefits universities and four-year colleges at the relative expense of community colleges. The use of graduate enrollments as an input factor benefits universities more than four-year colleges, and, of course, adds nothing to li-

*Kendon Stubbs, associate director of the University of Virginia Library and a member of the subcommittee, was responsible for the analysis of the capabilities and limitations of ridge regression.

brary staff for community colleges. The use of sites counterbalances the differential effects of graduate enrollments on universities and four-year colleges, as heavier weighting for sites will contribute relatively more staff to the four-year colleges than to the universities.

Note that the very methodology used for deriving the weights makes it impossible to defend them on grounds other than that they supply a satisfactory mathematical solution. That is, while it may be possible to argue that graduate students affect library needs ten times more than do undergraduates, such an argument would be strictly post hoc. The particular weights chosen will have to stand or fall on the extent to which the formula they yield is acceptable.

The formula does seem to meet the specified criteria quite well. It is a single formula (precept 4) and it is based on demand factors (precept 3) for which statistical measures are readily available (precept 2). The formula is not wholly based on enrollments, but on a balanced set of inputs, which satisfies precept 6. In fact, if one divides the total count on any parameter by the formula denominator to see how many staff positions that parameter determines, one discovers an interesting symmetry between the three parameters describing the academic constituency of the library and the three that pertain to its internal work load. Fifty-one percent of predicted staff is determined by the academic constituency: 11 percent by undergraduates, 12 percent by graduate students, and 28 percent by faculty. Forty-nine percent is determined by library measures: 8 percent by acquisitions, 31 percent by holdings, and 10 percent by sites. (The relative weights of each factor appear to have a different degree of importance if comparisons are confined to any one type of institution; from the point of view of a community college making comparisons to its peers, the formula is heavily "driven" by student and faculty counts, while for the larger institutions volume counts and acquisitions appear to be more salient.)

The formula calls for very nearly the same staff levels as were dictated by the former guidelines (precept 1), as table 2 shows.

The statistical relationships between the formula and existing staff levels are also high (precept 5). Table 3 shows the correlations between the formula-driven staff levels and two measures of current staff, one taken as part of the subcommittee's 1978 survey and one based on a preliminary analysis of the latest HEGIS data.

TABLE 2

STAFF LEVELS CALLED FOR BY OLD AND NEW GUIDELINES

	New Formula	Former Guidelines	Percentage
Universities	673	677	99.4
Four-year colleges	263	267	98.5
Community colleges	270	275	98.2
Totals	1,206	1,219	98.9

TABLE 3

CORRELATIONS BETWEEN FORMULA AND CURRENT LEVELS

	1978 Survey	Preliminary HEGIS
Universities	0.9996	0.9986
Four-year colleges	0.9465	0.9657
Community colleges	0.9801	0.9858
Overall	0.9939	0.9965

DISCUSSION

One reason that formulas have come in and out of fashion may be an excessive desire on the part of those who apply them to see a formula as an authoritative dictum that will make decisions in a nearly automatic way, combined with a reluctance to understand the problems a formula seeks to address and the logical problems a formula must solve.[21] Such a rigid attitude toward any formula will limit its transportability from one situation to another or its ability to be adapted over time to accommodate changing realities.

There are at least three ways in which, if put into practice, the formula discussed here may require adjustment for particular circumstances. Recent practices in Virginia have led to staffing levels for the senior institutions that more or less met the formula-driven levels, while the community colleges have been staffed below formula. The Virginia subcommittee sought to reaffirm its support of the overall levels called for by the former approach by constraining its formula to predict the same number of positions in each category as the previous guidelines had called for. A later decision

that the trend in staff allocation had been a healthy one and the subcommittee's decision incorrect would necessitate a revision of the formula (specifically, a greater weighting for collection parameters and less weight for enrollments).

It may also be necessary to adjust the formula if it is applied to an institution larger than those found in Virginia. If applied to the library system of one of the nation's largest universities, the formula might predict an inappropriate number of positions, necessitating some sort of adjustment of weights, such as the introduction of sliding scales.

Finally, it is critical to bear in mind that any formula cannot reflect all of the many kinds of unique needs that individual institutions may have. The Virginia subcommittee sought to address this issue when it noted that "there are certain library activities the Subcommittee feels are appropriate to acknowledge as non-quantitative factors not reflected in the formula which play a significant role in establishing good staff levels. A particular example is the responsibility to maintain a notable rare books and archives collection which carries with it a heavy demand for library staff. Accordingly, the formula should apply only to functional staffing areas. Requests for additional staff in support of auxiliary functions may well be legitimate and should be recognized on a case-by-case basis."[22]

References

1. F. William Summers, "The Use of Formulae in Resource Allocation," *Library Trends* 23:631–42 (1975).
2. David R. Watkins, "Standards for University Libraries," *Library Trends* 21:190–203 (1972).
3. Association of College and Research Libraries, "Standards for University Libraries," *College & Research Libraries News* 40:101–10 (1979).
4. Gilbert W. Fairholm, "Essentials of Library Manpower Budgeting," *College & Research Libraries* 31:332–40 (1970).
5. An excellent review of several library staffing formulas, including those of California, Florida, and Washington, is given in Peter Spyers-Duran's "Prediction of Resource Needs: A Model Budget Formula for Upper Division Universities" (Ph.D. dissertation, Nova Univ., 1975), ED 112 883.
6. H. William Axford, "An Approach to Performance Budgeting at the Florida Atlantic University Library," *College & Research Libraries* 32:87–104 (1971).
7. Subcommittee on Library Development, "Recommendations for the Support of California State College Libraries" (Second Report to the Chancellor, 1966).
8. Freeman Holmer, "A Revised Budgeting System for the Oregon Department of Higher Education," *NACUBO Professional File* 8, no.3 (Washington, D.C.: National Association of College and University Business Officers, 1976), ED 129 140.
9. Edward Huber and others, *Report of Staffing—Recommendations for Virginia Institutions of Higher Education* (Richmond, Va.: Virginia State Council of Higher Education, 1976).
10. Elizabeth A. Scott and others, *Report of the Subcommittee on Staffing of the Library Advisory Committee of the Virginia State Council of Higher Education* (Richmond, Va.: Virginia State Council of Higher Education, 1980).
11. Ibid.
12. Joe K. Taylor, internal memorandum to the Virginia Subcommittee on Staffing, 1978.
13. Summers, "The Use of Formulae," p.639.
14. William J. Baumol and Matityahu Marcus, *Economics of Academic Libraries* (Washington, D.C.: American Council of Education, 1973).
15. Paul Douglas Metz, "The Academic Library and Its Director in Their Institutional Environments" (Ph.D. dissertation, Univ. of Michigan, 1977).
16. D. Kent Halstead, *Statewide Planning in Higher Education* (Washington, D.C.: Govt. Print. Off., 1974) p.709.
17. Huber, *Report of Staffing*.
18. Scott, *Report of the Subcommittee on Staffing*, p.26.
19. See, for example, Fairholm, "Essentials of Library Manpower Budgeting."
20. Baumol and Marcus, *Economics of Academic Libraries*, p.85–86.
21. Watkins, "Standards for University Libraries," notes that "according to Clapp, [the Clapp-Jordan formula] was published only as a basis for discussion," though its critics may have viewed it as a much more definitive statement (p.198).
22. Scott, *Report of the Subcommittee on Staffing*, p.29.

RICHARD HUME WERKING AND
CHARLES M. GETCHELL, JR.

Using *Choice* as a Mechanism for Allocating Book Funds in an Academic Library

College and university libraries have long used a variety of criteria to allocate funds for book purchases. This article reiterates the need for a "literature-size" approach to book fund allocations and presents a case for using reviews from Choice *magazine as a useful and hitherto ignored means of determining literature size. Data from one calendar year (eleven issues) show the number and percentages of titles and the dollar amount and percentage represented by each subject category. Suggestions for updating the information are offered.*

OVER THE YEARS academic libraries have employed various criteria for allocating book budgets. Several of those criteria have been related to the activities of the local academic departments: number of faculty, number of student credit hours, number of majors, usually with a consideration of the level of courses and students. Another criterion involves local demands made on the collection, gauged by circulation of materials according to subject classification. In addition, during the late nineteenth and early twentieth centuries allocation based on the size of publication output by subject (in terms of titles and dollars) was, according to Schad, "often taken as an index of budgetary need."[1]

Although the "literature-size" approach to the allocation of book funds is apparently much less common nowadays than it once was, it has nevertheless had some champions in recent years.[2] In 1970 Massman and Patterson observed, perhaps a bit too single-mindedly:

> An academic library's holdings can be determined only by the quantity and range of the materials being published which are relevant to the academic programs it is supporting, not by the traditional number-of-students criterion. . . . The only relevant reality is the reality of the number and quality of books being produced. . . . Is there any college in the United States which does not need substantial coverage on such questions as the war in Vietnam, racial problems, student unrest, Shakespeare, the Civil War, Russian history? If there is, is that institution really worthy of being called a college?[3]

A year later Dillehay echoed the sentiment, emphasizing "the number and cost of books being produced," and in 1975 Voigt made the same point.[4] In 1967 McGrath provided a breakdown of books listed in the 1965 volume of *American Book Publishing Record, BPR*, giving for each subject category the number of titles and their cost. He then calculated the share of titles and of dollars accounted for by each subject, and he noted that perhaps one reason some academic departments fail to spend their allocations was that "not many books having relevance to

Richard Hume Werking is acting director, University of Mississippi Libraries, University, Mississippi; Charles M. Getchell, Jr., is a reference librarian, University of Kansas Libraries, Lawrence, Kansas.

their work have been published each year."[5]

Impressed by arguments on behalf of the literature-size approach as one important criterion for allocation, the collection development officer at the University of Mississippi Libraries began in 1979 to seek a more balanced approach to the allocation of book funds. At that time a majority of those funds were allocated by the university administration among academic departments on the basis of a traditional "head-count" formula, specifically the number of student credit hours weighted according to level. Leaving those funds with the departments, the collection development officer wished as an experiment to divide the few remaining book dollars, for which librarians were responsible, along very different lines. He wished to allocate for each discipline a share that would resemble its share of academic book publishing in a given year. Hence for the first time some of the criteria for dividing the university's book budget would originate off campus.

There is no entirely satisfactory source of information about the number of academic books published each year, by discipline, or their dollar cost. The best-known data are those published in the *Weekly Record* of *Publishers Weekly*, cumulated annually in the *American Book Publishing Record, BPR Cumulative* (the source of McGrath's data), and reprinted in *The Bowker Annual of Library and Book Trade Information*. There are several major problems with these sources. First, they report *all* U.S. book publishing, much of which (e.g., medical and law texts, fiction, and highly popular treatments) would not be appropriate for most academic libraries. Second, foreign imprints are not included. And finally, the categories as cumulated in *BPR* and the *Bowker Annual* are insufficiently precise for allocation purposes. For example, "Science" is reported as a single category, as are "Philosophy/Psychology" and "Sociology/Economics."[6]

Other attempts to determine literature size, those by Massman and Patterson and by Dillehay, examined reviews in selected professional journals for one and two years respectively. Their reliance on reviews in scholarly journals is probably more appropriate for most academic libraries than McGrath's use of *ABPR*. Yet the subject-breakdown and cost data supplied by Massman and Patterson, drawn from reviews in 1967, are probably quite outdated by now and have relatively little application directly as allocation information. (Dillehay provided readers with no data showing breakdown of titles or costs by subject.) Moreover, the authors included only titles that they considered received favorable reviews and also were "of undergraduate significance."[7]

Choice magazine, published eleven times a year by the Association of College and Research Libraries, appeared to be a valuable and neglected source of information about the size and composition of the academic literature. This selection was confirmed in conversations with bibliographers at several large and small universities. Since 1964, *Choice* has published short reviews of books selected by its editors as "serious literature" and as "significant current publications . . . in the literature of [a] field and in an undergraduate library collection."[8] Despite its avowed bias toward undergraduate items, reviews frequently note a title's suitability for graduate work, and *Choice*'s coverage of university presses and the commercial academic publishers such as Wiley, Sage, Free Press, and Elsevier seems quite comprehensive.[9] The reviews, arranged in forty-eight subject categories, provide complete bibliographic information, including price. It was decided to compile the number of titles reviewed in one calendar year and their cost, for each of the forty-eight subjects.

Unfortunately, the data had to be compiled manually from *Choice*. The journal does produce lists for in-house use, showing for each issue the number of titles by subject area, and these figures have been cumulated for each volume year. But thus far the data have not been widely available. Moreover, the *Choice* staff has not yet produced financial data showing the dollar amounts of titles reviewed, either in the aggregate or broken down by subject.* Consequently, the collection development officer and a student assistant compiled the

*Such data should be readily at hand once the journal goes to computer-assisted publishing.

information from *Choice* for 1978, title by title. The number of titles and the prices were subtotaled for each *Choice* subject category each month, then added together to get a yearly total for the subject category.*

Table 1 gives the results for all subjects combined. It shows that in 1978 a library could have purchased every book reviewed in *Choice*, including a large number of reference items, for $124,931.

TABLE 1

RESULTS OF *CHOICE* STUDY: ALL TITLES

	No. of Titles	Dollar Amount	Avg. Amount per Title
All subjects	6,636	$124,931	$18.83

Two adjustments were deemed necessary before percentages and average prices could be satisfactorily figured for each subject area. First, four titles were excluded from consideration because of their highly unrepresentative prices. Three of these were reprint sets and the other a set of documents in facsimile.† Table 2 shows the result after eliminating these four titles.

The second adjustment dealt with reference materials. As table 3 shows, *Choice*'s "reference" category accounted for almost 13 percent of the total cost of the reviewed books. Principally because of the category's mixture of general and subject-specific

*The authors worked strictly from the bibliographic information provided in the reviews themselves and did not include items cited in the bibliographic essays.

†These items were: *Blacks in the United States Armed Forces*, ed. Morris M. MacGregor and Bernard C. Nalty, Scholarly Resources, 12 volumes, $595; *Studies in Fascism: Ideology and Practice*, AMS Press, 50 volumes, $1,016; U.S. Congress, *Congressional Journals of the United States, 1789–1817*, Michael Glazier, 65 volumes, $2,316; *Lost Race and Adult Fantasy Fiction*, Arno, 69 volumes, $1,500.

TABLE 2

RESULTS OF *CHOICE* STUDY: LESS FOUR TITLES

	No. of Titles	Dollar Amount	Avg. Amount per Title
All subjects	6,632	$119,504	$18.02

items, it was excluded for purposes of determining each subject's share of the scholarly literature, and other means were used to establish locally a dollar figure for reference purchases.

Proportions were calculated, and allocations to the reference bibliographers determined, largely on the basis of each subject's dollar share of the literature. Table 4 shows the distribution among the remaining subject areas defined by *Choice*. Excluding the four titles noted above and the reference category, 6,179 titles were reviewed during 1978, costing $104,024, for an average per-title cost of $16.83.

Using data from *Choice* to determine academic book publishing output is by no means flawless. One inevitable problem is the categorization of titles. Many schools have programs and departments, such as black studies or American studies, that are not explicitly represented in the *Choice* categories, although numerous books in these areas are reviewed by the journal. Special arrangements must be made in such instances. Also, as universities become more narrowly vocational, they may need more library materials that are not defined as traditionally academic, and the *Choice* titles may not adequately reflect those needs.

Nevertheless, Massman and Patterson, Voigt, and others have already made a good case that book allocations for an academic library should reflect, to a significant degree, the proportions of books published by discipline and their costs. The manner in which they do so will likely depend on the individual library's perceived mission and its ability to act on that perception. At present *Choice* seems to be a useful, and untapped,

TABLE 3

RESULTS OF *CHOICE* STUDY: REFERENCE MATERIALS

	No. of Titles	% of Titles	Dollar Amount	% of Total Amount ($119,504)	Avg. Amount per Title
Reference	453	6.83	$15,471	12.95	$34.15

TABLE 4

RESULTS OF *CHOICE* STUDY:
LESS FOUR TITLES AND REFERENCE MATERIALS

Subject	No. of Titles	% of Titles	Dollar Amount	% of Total Amount	Avg. Amount per Title
General	47	0.76	$ 717	0.69	$15.25
Humanities, General	92	1.49	1,485	1.43	16.14
Art	315	5.10	8,378	8.05	26.60
Communication Arts	71	1.15	997	0.96	14.03
Language and Literature	97	1.57	1,298	1.25	13.38
Linguistics	22	0.36	332	0.32	15.07
Classical	18	0.29	241	0.23	13.41
English and American	834	13.50	10,357	9.96	12.42
Germanic	51	0.83	629	0.60	12.35
Romance	101	1.63	1,239	1.19	12.27
Slavic	46	0.74	608	0.58	13.22
Other	67	1.08	873	0.84	13.03
Performing Arts	16	0.26	241	0.23	15.07
Dance	21	0.34	272	0.26	12.95
Film	80	1.29	1,256	1.21	15.70
Music	138	2.23	2,084	2.00	15.10
Theater	34	0.55	471	0.45	13.84
Philosophy	197	3.19	2,800	2.69	14.21
Religion	300	4.85	3,595	3.46	11.98
TOTAL HUMANITIES	2,500	40.45	37,156	35.72	14.86
Science and Technology	102	1.65	2,174	2.09	21.31
History of Science and Technology	85	1.38	1,477	1.42	17.37
Astronautics and Astronomy	22	0.36	523	0.50	23.78
Biology	231	3.74	5,468	5.26	23.67
Chemistry	95	1.54	2,716	2.61	28.59
Earth Science	84	1.36	2,519	2.42	29.99
Engineering	241	3.90	6,207	5.97	25.75
Health Science	92	1.49	1,369	1.32	14.88
Information Science	53	0.86	1,080	1.04	20.37
Mathematics	70	1.13	1,577	1.52	22.54
Physics	47	0.76	1,352	1.30	28.77
Sports and Recreation	73	1.18	753	0.72	10.32
TOTAL SCIENCES	1,195	19.35	27,215	26.17	22.77
Social and Behavioral Sciences, General	156	2.52	2,554	2.46	16.37
Anthropology	102	1.65	1,731	1.66	16.97
Business, Management, Labor	136	2.20	1,952	1.88	14.36
Economics	242	3.92	4,270	4.10	17.65
Education	129	2.09	1,610	1.55	12.48
History, Geography, Travel	116	1.88	1,887	1.81	16.26
Ancient (including archaeology)	67	1.08	1,460	1.40	21.79
Africa	38	0.61	621	0.60	16.34
Asia and Oceania	78	1.26	1,484	1.43	19.03
Europe	308	4.98	5,088	4.89	16.52
Latin America and the Caribbean	47	0.76	744	0.72	15.82
Middle East, North Africa	40	0.65	672	0.65	16.80
North America	275	4.45	4,423	4.25	16.08
Political Science	281	4.55	4,141	3.98	14.74
Psychology	142	2.30	2,185	2.10	15.39
Sociology	280	4.53	4,114	3.95	14.69
TOTAL SOCIAL AND BEHAVIORAL SCIENCES	2,437	39.43	38,936	37.43	15.98
GRAND TOTAL	6,179	99.99	104,024	100.01	16.83

source of literature-size information for college and university libraries. Until *Choice* adopts automated typesetting and can update the data in that fashion, or until ACRL or some other agency can do so manually, the information presented here should be of considerable use to academic institutions that wish to incorporate literature-size criteria into their allocation processes.*

*In the meantime, a reasonable shortcut to updating the data presented above would be to obtain from *Choice* (or through ACRL if it would perform this useful service) its monthly and annual figures on the number of titles reviewed, by subject area, and multiply the number times the average price reported here, adjusted by a rate of inflation. If desired, the *Bowker Annual* could be used to gain an approximation of the various rates of inflation in the several subject areas.

References

1. Jasper G. Schad, "Allocating Book Funds: Control or Planning?" *College & Research Libraries* 31:155 (May 1970); Melvin J. Voigt, "Acquisition Rates in University Libraries," *College & Research Libraries* 36:265 (July 1975).
2. Voigt, "Acquisition Rates," p.265.
3. Virgil F. Massman and Kelly Patterson, "A Minimum Budget for Current Acquisitions," *College & Research Libraries* 31:84, 86 (March 1970).
4. Bette Dillehay, "Book Budget Allocation: Subjective or Objective Approach," *Special Libraries* 62:510 (Dec. 1971); Voigt, "Acquisition Rates," p.265.
5. William E. McGrath, "Determining and Allocating Book Funds for Current Domestic Buying," *College & Research Libraries* 28:269–72 (July 1967).
6. *The Bowker Annual of Library and Book Trade Information* (24th ed.; New York: Bowker, 1979), p.322.
7. Massman and Patterson, "A Minimum Budget for Current Acquisitions," p.85.
8. Descriptive material sent by editor Louis B. Sasso to the authors, 1979.
9. At the same time, it should be noted that *Choice* does not review material that the editors consider *strictly* graduate level. Personal communication to the authors from editor Jay Poole, May 20, 1980.

GARY S. LAWRENCE

A Cost Model for Storage and Weeding Programs

As space and budget problems become more severe, more academic libraries will be forced to consider storage and weeding as alternatives to new construction. Storage and weeding save space, but impose costs that may offset the potential savings. The simple mathematical model presented in this paper was developed to analyze the complex cost trade-offs involved. An example of the model's application in the University of California libraries is included. The limitations of the model and the importance of considering noneconomic factors in storage and weeding programs are discussed.

ALTHOUGH LIBRARIES are *always* "running out of space," this problem began to take on considerable importance during the 1970s, when budgetary austerity curtailed the library construction boom of the previous decade. By 1975, the space issue was of sufficient importance that the American Library Association's Library Administration Division sponsored a preconference session at its Annual Conference titled "Running Out of Space—What Are the Alternatives?"[1]

As the title of this preconference implied, libraries were and are facing a number of alternatives for coping with their space problems. According to the conference organizers, these include storage, microforms, high-density shelving equipment, regional cooperation, and new construction, including addition and renovation. Among these alternatives, microforms are surely the least appealing for the individual library. Studies have shown that purchasing commercial microform may be cost-effective, but the amount of commercially available material that could replace the books and journals on the shelves of large academic libraries is rather small. Original microfilming of bound volumes appears to be more expensive than building new libraries to house the paper copies.[2] For libraries facing the space problem today, then, the principal alternatives appear to be storage, weeding, and new construction.

Certainly the last alternative, new construction, is seen as the most desirable by most librarians and library users. Unfortunately, "running out of space" is perceived as a problem precisely because unlimited construction of new buildings is not believed to be economically possible at the present time or in the foreseeable future. The principal problem is *economic*. If libraries had enough money to build the new facilities they need, there would be no books and articles and conferences on alternatives to new construction—there would be no "space problem."

It follows that if the problem is primarily economic, the decisions we make in coping with the problem, and the justifications for those decisions, should be based on (although not limited to) economic considerations.

COST TRADE-OFFS IN STORAGE AND WEEDING DECISIONS

The choice to retain, store, or weed involves analysis of cost trade-offs. Ellsworth

Gary S. Lawrence is senior administrative analyst in the Library Studies and Research Division, Office of the Assistant Vice-President—Library Plans and Policies, University of California Systemwide Administration, Berkeley, California.

has observed, for instance, that compact storage systems "can store more volumes per square foot of space than traditional multi-tier bookstacks," but "there are costs associated with storage programs that may be greater than are the savings made by the storage systems themselves."[3]

Cost trade-offs in storage and weeding decisions are analogous to those in the choice between continuing to subscribe to a particular periodical or canceling the subscription and relying on interlibrary borrowing to satisfy future demand. Palmour states that:

> To maintain a periodical in its own collection, the library must select, order, process, store and make the publication available. For a requested item in a publication not in its own collection, there is the staff cost to locate and borrow the item; and in many cases, a photocopy charge. The cost to satisfy a request by borrowing is roughly the same each time, whereas the average cost per circulation of a publication acquired for the library collection is a function of how frequently it is circulated. Consequently, for any given periodical title there is some frequency of use at which it becomes cheaper for a library to acquire the publication than to borrow it to satisfy patron demand.[4]

The solution to the storage and weeding problem can be expressed in similar terms: for any given volume in the library collection, there is some frequency of circulation at which it becomes cheaper *not* to house the publication in a conventional campus library. The ability to determine this frequency of circulation can be an important aid to planning, budgeting, and negotiating the solution to a library's space problem.

This paper presents a simple mathematical model that accounts for several of the complex cost trade-offs inherent in storage and weeding decisions, and provides an example of the application of this model in the University of California libraries.

The Cost Model

Inasmuch as the problem of maintaining or canceling periodical subscriptions is somewhat similar to the problem at hand, it is not surprising that a cost model developed to analyze the subscriptions problem is, with minor modifications, admirably suited to analysis of the storage and weeding problem.

The cost model developed by Palmour and others was designed to determine the total discounted cost, over a specified planning period, attributable to the ownership and use of a single periodical title.[5] Thus, the Palmour model included such elements as the annual subscription price, annual staff costs related to check-in and claiming, mechanisms to estimate varying use rates for all the extant and future volumes of the title, the increasing space requirements of the title over time, and other factors relevant to the analysis of serial publications at the title level.

Because the present study concerns individual volumes (both monographs and periodicals) rather than runs of periodical titles, it has proven possible to simplify the Palmour model greatly and to represent it in a linear form that can be used without reliance on a computer. The resulting cost equation has four principal components: (1) a "net present value factor" for discounting expenditures occurring in the future; (2) the cost of building and maintaining a library facility, expressed in dollars per volume; (3) the cost to select and process a volume for storage or weeding; and (4) the direct cost for one circulation of a volume, including transportation and communication costs and lending fees. The derivation of this cost model is explained in detail in the appendix.

The simplified cost model is shown in equation 1.

$$U_t = \frac{C_u r_t}{t} + \frac{C_w + C_v r_t}{t} Y \qquad [1]$$

where:

- U_t = the total cost *per circulation*, expressed as a present value when capital costs are amortized over planning period t.
- Y = the expected average number of years between circulations.
- r_t = the net present value factor for a discount rate r over planning period t

  $$(r_t = \sum_{n=1}^{t-1} \frac{1}{1+r^n} = \frac{(1+r)^{t-1}-1}{r(1+r)^{t-1}},$$

  by a standard formula).
- C_v = the annual cost of housing the volume.
- C_w = the one-time cost to select the volume for weeding or relegation to compact shelving.
- C_u = the direct cost per circulation.

Applying the Model: An Example

We can demonstrate the application of the cost model using estimates drawn from published studies and various budget and planning documents produced within the University of California to support development of the university's storage program.[6] Costs used here are adjusted to 1978 dollars using the GNP deflator.

Discount Rate and Planning Period

The value of r_t in equation 1 is derived from r, the interest rate, and t, the planning period. Several values for the interest rate are defensible in theory, but in practice the rate for AAA corporate bonds is most frequently used. This rate was fluctuating around 8 percent in 1978, and $r = 0.08$ is used throughout this analysis. The value of t is the "useful life" of the object in question, in this case the library or storage facility. We have used a period of forty years, which is a frequently cited depreciation period for nonresidential buildings. When $r = 0.08$ and $t = 40$, the value of r_t is 11.88. Substituting the values of t and r_t in equation 1 yields equation 2.

$$U_t = \frac{11.88\, C_u}{40} + \frac{C_w + 11.88\, C_v}{40}\, Y \quad [2]$$

Campus Retention

The annual cost of housing material (C_v) in a conventional library has two components: the annualized capital cost of construction and equipment, and the annual recurring cost of maintaining the facility. The average cost per volume to construct and equip a campus library in California in 1978 has been estimated at about \$10.13 per volume. The annual value of the initial capital expenditure is calculated using the standard formula:[7]

$$A = P\left(\frac{i}{(1+i)^n - 1} + i\right)$$

where:

- i = interest rate per period.
- n = number of periods.
- P = the present sum of money, or initial investment.
- A = the end-of-period payment in a uniform series for n periods, the entire series equivalent to P at interest i.

The annualized cost of a \$10.13 capital expenditure over forty years at 8 percent is \$0.85 per year. The annual cost of maintenance has been estimated by the university to be about \$0.24 per volume per year. C_v is then \$0.85 + \$0.24, or \$1.09 per year.

The cost of each circulation (C_u) includes record keeping, charging and discharging a volume, and reshelving it. Using budget and circulation data from the UC libraries, the average cost per circulation in 1978/79 dollars was about \$0.92. For materials retained on campus there are no selection costs (or more precisely, the costs of a selection program are assigned entirely to the items finally chosen for storage or weeding). Substituting these estimates in equation 2, the cost per circulation for materials retained on campus is shown in equation 3.

$$U_t^c = \frac{11.88(.92)}{40} + \frac{0 + 11.88(1.09)}{40}\, Y$$

$$= .2732 + .3237\, Y \quad [3]$$

Relegation to Storage

The housing cost (C_v) for storage facilities has two components analogous to those of on-campus housing: the annualized capital cost of building and equipping the facility, and the annual recurring maintenance cost.

Preliminary estimates made in 1978 for the University of California's regional storage program suggested that the cost of constructing and equipping such facilities would be about \$2.33 per volume. Annualized over forty years at 8 pecent, this amounts to \$0.20 per year. With maintenance and utilities costs, C_v is about \$0.44 per volume per year.

The cost of selection (C_w) includes identification, transportation, shelving, and record changing. Estimates of the cost to identify items for storage and weeding range from \$0.70 per volume *considered* for discard[8] to \$2 per volume selected.[9] Because the decision to send a book to storage is reversible (i.e., the volume can always be returned to the campus collection), we have assumed that an inexpensive selection procedure is acceptable, and used the lower figure of \$0.70 per volume examined. Assuming that 90 percent of the books examined are chosen for storage, the cost is

$0.78 per volume *selected*. Adding the estimated cost of changing bibliographic records, $1 per volume, gives a total of $1.78, or $1.93 in 1978 dollars.[10] Book transportation and initial shelving may add about $0.70, for a total of $2.63 per volume.

The unit cost of circulation (C_u) from storage facilities includes retrieval, transportation, communication, and reshelving. These are all costs incurred by the library. An additional cost is borne by the patron—the cost of the time delay inherent in retrieving materials from an off-campus facility.

Estimates of expected circulation rates and staff costs for the proposed UC regional facilities suggest a unit cost of about $1.66 per transaction. The "cost" to users of an expected two-day delay in delivery from the regional facilities[11] has been estimated from two sources, a published study of the relative utility of timeliness in the delivery of library services[12] and a University of California study of the willingness of users to pay for forty-eight-hour interlibrary borrowing service.[13] On the basis of these studies, we estimated that users would, on the average, be willing to pay $2.12 to avoid the forty-eight-hour delay in delivery of materials housed in the UC storage facilities.

To the direct cost of circulation ($1.66) and the cost of delay ($2.12), we add the cost of round-trip transportation, estimated at $1.50 per circulation, to arrive at the total direct cost of a single circulation, C_u = $5.28 per transaction. The total cost per circulation for materials relegated to storage is therefore as shown in equation 4.

$$U_t^s = \frac{11.88(5.28)}{40} + \frac{2.63 + 11.88(.44)}{40} Y \qquad [4]$$

$$= 1.5682 + .1964\ Y$$

Removal from the Collection

The cost of weeding (C_w) is analogous to the selection of volumes for compact shelving, and includes review, record changing, and disposing of the volumes. Assuming that a library would adopt the most rigorous feasible review procedures for an irreversible decision to discard a volume, the highest cost estimate found in the literature, $2 per volume selected, seems justified.[14] Adding the cost of changing library records, the total is $3.73 per volume in 1978 dollars.

The cost of circulation (C_u) includes both internal and external costs incurred by the borrowing library. According to Palmour's study, requesting libraries spend about $7.20 per transaction to process an interlibrary lending (ILL) request.[15] In addition, the borrowing library may have to pay a fee to the lending library. Like Palmour, we have assumed that lending libraries charge $3 per volume lent on ILL, for a total of $10.20, or $11.04 in 1978. Using the procedures for estimating the cost of delay, discussed above, and assuming a two-week delay on ILL transactions, the cost of delay is $6.12. Thus, the cost of a circulation (C_u) is $17.16. The total cost per circulation for materials removed from the collection, where circulation is provided through interlibrary borrowing, is shown in equation 5.

$$U_t^w = \frac{11.88(17.16)}{40} + \frac{3.73 + 11.88(0)}{40} Y \qquad [5]$$

$$= 5.0965 + .0933\ Y$$

"Crossover Points" for Compact Shelving and Disposal

Costs per circulation for selected values of Y are presented in table 1 for each of the three cost functions. Figure 1 graphs the linear equations 3, 4, and 5 for values of Y from one use per year to one use in forty years.

We will refer to the point at which the cost per circulation for two housing alterna-

TABLE 1

ESTIMATED PRESENT VALUE COST PER CIRCULATION FOR THREE HOUSING OPTIONS

Average Years between Circulations (Y)	Present Value Cost per Circulation		
	Campus Library	Storage	Interlibrary Borrowing
1	0.60	1.76	5.19
2	0.92	1.96	5.28
3	1.24	2.16	5.38
4	1.57	2.35	5.47
5	1.89	2.55	5.56
10	3.51	3.53	6.03
15	5.13	4.51	6.50
20	6.75	5.50	6.96
30	9.99	7.46	7.89
40	13.22	9.43	8.83

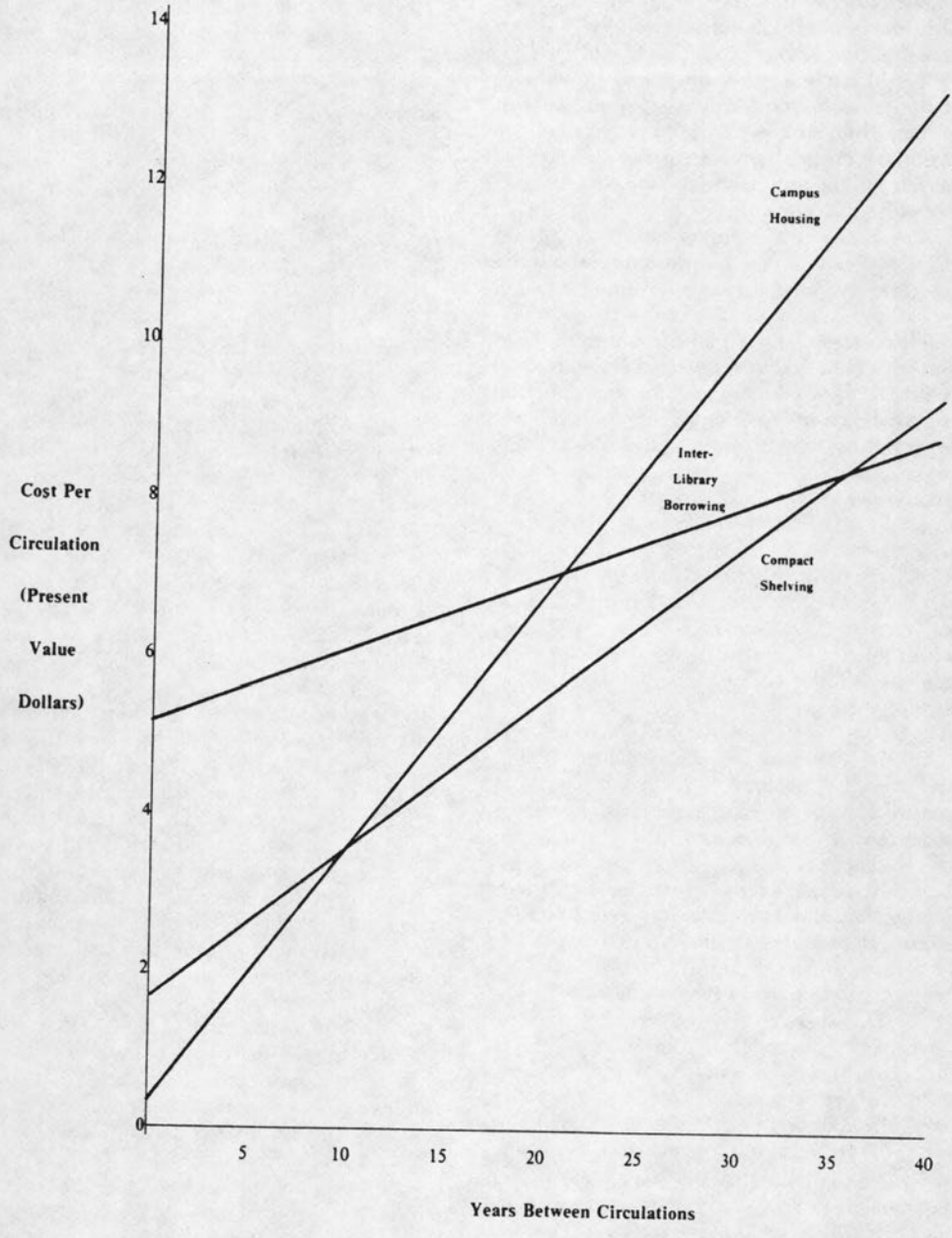


Fig. 1
Estimated Cost of Circulation for Three Housing Alternatives

tives is equal as the *crossover point* for those options. In figure 1, for instance, the cost function for campus housing crosses the function for storage at about Y = 10 years. When Y is less than ten (i.e., books circulate more frequently than once in ten years), the cost per circulation is less for campus housing than for storage. When Y is greater than ten, circulation costs are less for stored volumes.

Precise crossover points can be calculated from the cost functions presented above by setting the cost equations equal to each other and solving for Y. To find the campus-to-disposal crossover point, for instance, we set the campus-cost function (equation 3) equal to the weeding-cost function (equation 5), as shown in equation 6.

$$\begin{aligned} .2732 + .3237\,Y &= 5.0965 + .0933\,Y \\ (.3237 - .0933)\,Y &= 5.0965 - .2732 \\ .2304\,Y &= 4.8233 \\ Y &= 20.9345 \end{aligned} \qquad [6]$$

The precise crossover points resulting from these calculations are presented in table 2.

TABLE 2

CROSSOVER POINTS FOR STORAGE AND DISPOSAL

Disposition		Years between Uses (Y)
From	To	
Campus	Disposal	20.93
Campus	Storage	10.17
Storage	Disposal	34.22

On the basis of these estimates, we conclude that *when there is no storage facility*, items that are circulated once or more in twenty-one years should be retained on campus; when the circulation rate is less than once in twenty-one years, it is less expensive to discard the volume and rely on interlibrary borrowing to meet demand. *When there is a storage facility*, items that are circulated once or more in ten years should be retained on campus. Volumes with circulation rates between once in ten years and once in thirty-four years are more economically placed in storage. For volumes with circulation rates lower than once in thirty-four years, it is less expensive to dispose of them or place them in national repositories and satisfy demand for them through interlibrary borrowing.

DISCUSSION

The cost model reported here is relatively simple and straightforward; obtaining correct cost figures to use in the model is not necessarily so easy. In using this model for cost analysis and interpreting the results, there are three sources of potential difficulty: accuracy of the cost estimates, acceptability of the assumptions, and capacity to apply the results.

The result of economic modeling can be no better than the data used in the model. Accuracy may be difficult to achieve, though, when the library is considering options with which it has no previous experience, and therefore must use estimates based on the experience of others. Sensitivity of the results to uncertain cost estimates can be important. For example, if the actual cost per item for transportation to storage is only $0.07, rather than the estimate of $0.70 used in the example discussed above, both selection and direct circulation costs are affected. The result of this change in an apparently minor cost factor is to shift the crossover point between campus housing and storage from one use in 10.17 years to one use in 6.25 years.[16]

The application illustrated here has also made use of a number of simplifying assumptions. The clearest example is the assumption that all uses and use-related costs can be accounted for by circulation. Ideally, the analysis should include all forms of use of material, including uses at tables and shelves within the library. Unfortunately, few libraries have information on the incidence of in-library use of their collections, or the capacity to account separately for the costs of in-house and circulated use.

Another important assumption is that demand for library materials is invariant with changes in delay times, distance, or convenience. The fact that materials are no longer in the campus collection may have an effect on user demand for them, even though they may still be available at storage facilities or through interlibrary borrowing. We have attempted to account for the problem in our analysis by including an estimate of the cost to users of the inconvenience of waiting for materials delivered from storage or through interlibrary borrowing, but it is

likely that this adjustment does not fully account for the possible effect on library users of remote housing of library material.

When we speak here of weeding and reliance on interlibrary borrowing, we assume that a copy of the weeded item will be available in some other library when needed. In the absence of a national "last-copy clearinghouse" that would assure availability of at least one copy of any publication, this assumption may be unwarranted. If we abandon the assumption, the cost of circulation for the disposal option must rise by some unknown factor to reflect costs imposed on users by the absolute unavailability of previously owned material. Depositing weeded items in a national repository like the Center for Research Libraries might solve this problem; the proposed National Periodicals Center is another possible solution. Accounting for these possibilities in the cost analysis adds considerable complexity and uncertainty (especially in the case of the NPC), but the inclusion of cooperative last-copy arrangements at the national or regional levels is an obvious direction for further development of this analytical technique.

This analysis also assumes that each volume in the library is an independent entity for the purpose of storage or weeding choices. Rigorous adherence to this assumption could result in breaking up a journal set in which only a few volumes are used frequently, which could be an injudicious decision. Separate treatment of monographs and periodicals, government documents, special collections, reserves, or other definable subcollections could be useful. Each such level of partitioning raises problems in securing book-use and cost data, but disaggregation of collections is another promising direction for further development of the analysis.

Finally, we take note of limitations in the capacity to apply the findings of the cost analysis. Having established a criterion of, say, one use in ten years as a criterion for relegation to storage, it is necessary to have some information about the past and current use of the collection in order to estimate the amount of material to be stored and to aid in selecting individual volumes. Such data are not readily available in most libraries and are not always easy to obtain.

Despite these limitations (some of which can perhaps be overcome by additional data collection and analysis), the cost model demonstrated here has proven to be a useful tool for assessing the feasibility of storage and weeding programs, and is capable of providing useful information for initial planning and budgeting of such programs when they are shown to be feasible.

References

1. Gloria Novak, ed., *Running Out of Space—What Are the Alternatives? Proceedings of the Preconference, June 1975, San Francisco* (Chicago: American Library Assn., 1978).
2. See, for example, University of California, Office of the Executive Director of Universitywide Library Planning, *The University of California Libraries: A Plan for Development, 1978–1988* (Berkeley: Univ. of California, 1977), p.161–66.
3. Ralph E. Ellsworth, *The Economics of Book Storage in College and University Libraries* (Metuchen, N.J.: Scarecrow, 1969), p.13.
4. Vernon E. Palmour, Marcia C. Bellassai, and Robert R. V. Wiederkehr, *Costs of Owning, Borrowing, and Disposing of Periodical Publications* (Arlington, Va.: Center for Naval Analyses, 1977), p.1.
5. Palmour, *Costs of Owning*, p.23–29.
6. For a description of the program, see *University of California Libraries*, chapter X.
7. This financial formula is found in a number of textbooks, including Eugene L. Grant and W. Grant Ireson, *Principles of Engineering Economy* (5th ed.; New York: Ronald, 1970).
8. *Univeristy of California Libraries*, p.169.
9. George Piternik, *Book Storage in Academic Libraries: A Report Submitted to the Council on Library Resources* (Vancouver, B.C.: Univ. of British Columbia, School of Librarianship, 1974), p.7.
10. *University of California Libraries*, p.175.
11. The response-time standard of forty-eight-hour delivery from regional storage is enunciated in *University of California Libraries*, p.51.
12. A. Reisman and others, "Timeliness of Library Materials Delivery: A Set of Priorities," *Socio-Economic Planning Sciences* 6:145–52 (1972).
13. Donald D. Thompson, "Interlibrary Lending and Intercampus Photocopy: A Study of User

Demand and System Response among Northern University of California Campuses" (Berkeley: Univ. of California, General Library, Special Projects, June 25, 1975).

14. Piternik, *Book Storage in Academic Libraries*, p.7.
15. Palmour, *Costs of Owning*, p.46.
16. Details of this sensitivity analysis will be found in Gary S. Lawrence and Anna R. Oja, *An Economic Criterion for Housing and Disposing of Library Materials, Based on Frequency of Circulation* (Berkeley: Univ. of California Systemwide Administration, Office of the Assistant Vice-President—Library Plans and Policies, September 24, 1979), appendix C.

Appendix

The cost model developed by Palmour and others was designed to determine the total discounted cost, over a specified planning period, attributable to the ownership and use of a single periodical title. Most of the special features used in Palmour's model to account for multiple volumes are not necessary for the analysis of costs for a single volume already held by the library. The Palmour model has been modified to reflect these simplifying conditions.

The complete cost model developed by Palmour is shown in equation 1.

$$C = I_1 + (M_1 + P_1) \sum_{y=1}^{P} \Theta^{y-1} + C_{v1} \sum_{y=1}^{P} a_y \Theta^{y-1} + C_{w1} \sum_{y=1}^{P} w_y \Theta^{y-1} \qquad [1]$$

$$+ C_{u1} \sum_{y=1}^{P} D_y^{+} \Theta^{y-1} + C_{b1} \sum_{y=1}^{P} D_y^{-} \Theta^{y-1}$$

where:

- C = present value of all costs associated with owning, using, weeding, and/or borrowing the title.
- I_1 = initial cost to acquire and catalog a new title.
- M_1 = recurring annual cost (check-in, claiming, binding, etc.); this cost is assumed to be constant for all years in the planning period.
- P_1 = annual subscription cost; assumed to be constant for all years.
- y = the year index within the planning period, $y = 1$ to P.
- P = the length of the planning period in years.
- Θ = the net discount rate, defined as $\Theta = \frac{1+i}{1+r}$, where i is the inflation rate and r is the discount rate, expressed as decimal fractions.
- C_{v1} = cost of relegating an annual volume to remote compact shelving; assumed to be constant for all years in the planning period.
- a_y = the number of annual volumes of the title held in the library in year y.
- C_{w1} = the cost of weeding a single volume; assumed to be constant.
- w_y = the number of volumes weeded in year y.
- C_{u1} = the cost of satisfying a request for an annual volume held by the library.
- D_y^{+} = number of satisfied requests for an annual volume held by the library in year y.
- C_{b1} = cost of satisfying a request for an annual volume not held by the library (interlibrary borrowing cost).
- D_y^{-} = number of satisfied requests for annual volumes not held by the library in year y.

The derivation and justification of this formula are presented in appendix A of the Palmour report.

In the present case, there are no initial cataloging costs, annual recurring costs, or subscription costs, and the first two elements of the Palmour model reduce to zero. In the third component of equation 1 (the annual cost of housing the volumes of the title) the variable a_y (number of annual volumes held in year y) is always one in the present application, and the term reduces simply to $C_{v1} \Sigma \Theta^{y-1}$.

In the fourth component of equation 1 (the cost of selecting a volume for relegation or weeding), a volume is either weeded or it is not: w_y always equals one or zero. The expense incurred in selecting a single volume occurs only once: if we assume that the decision is made at the beginning of the planning period, the present value term ($\Sigma\Theta^{y-1}$) can be eliminated, and the cost of selection represented simply as C_{w1}; the variable has the value of zero when no selection process is involved. So far, then, the modified model is represented by equation 2.

$$C = 0 + 0 + C_{v1} \sum_{y=1}^{P} \Theta^{y-1} + C_{w1} + C_{u1} \sum_{y=1}^{P} D_y^{+} \Theta^{y-1} + C_{b1} \sum_{y=1}^{P} D_y^{-} \Theta^{y-1} \quad [2]$$

The last two components of the model deal with the costs of use of a title. Palmour needed two use-cost elements—internal use and interlibrary borrowing—because the library may incur internal costs for use of existing back files, as well as interlibrary borrowing costs for "future" volumes that are not purchased. For this analysis, the volume is either in the collection or it is not, and one cost component is sufficient.

The Palmour model must accommodate differing circulation rates for the title as a whole in successive years, to reflect the simultaneous effects of growth of the back file and declining circulation rates for older volumes, an unnecessary feature for the single-volume case. If the annual circulation rate of the volume is assumed to be constant over time, the rate-of-circulation parameter (D_y^{+}, D_y^{-}) can be moved outside the summation sign. The reduced version of the circulation-cost component is $C_{u1}\, D \sum \Theta^{y-1}$, where C_{u1} is the cost of a circulation for the alternative under consideration and D is the average annual circulation rate. The cost equation is now equation 3.

$$C = C_{v1} \sum_{y=1}^{P} \Theta^{y-1} + C_{w1} + C_{u1}\, D \sum_{y=1}^{P} \Theta^{y-1} \quad [3]$$

The summation operation on theta, appearing in two components, is constant for any given values of P and Θ. For convenience, we shall designate the value of $\sum \Theta^{y-1}$ as r_t for a given discount rate r, when P equals some value t. We can eliminate some unnecessary subscripts and express the model as shown in equation 4.

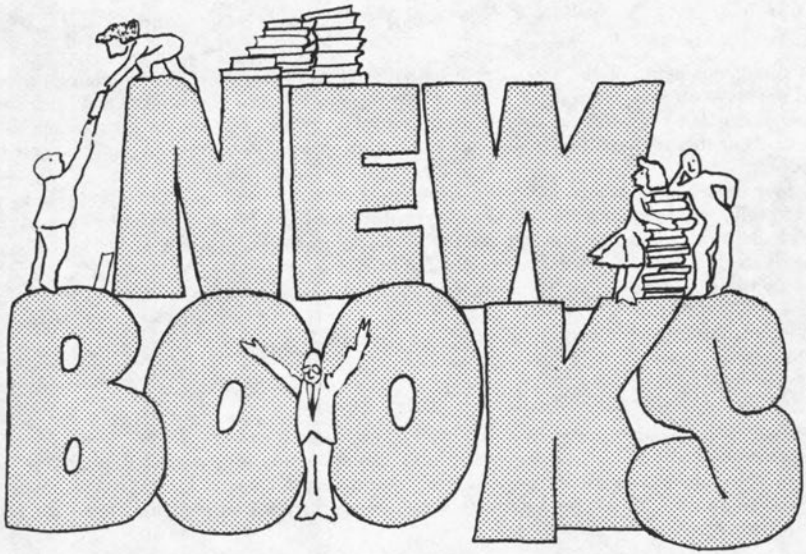
$$C = C_v r_t + C_w + C_u D r_t \quad [4]$$

Equation 4 represents the *total* cost of housing and circulating a volume with an annual use rate of D for a period of t years. It is convenient to express the result of the cost equation in terms of cost per circulation. If D is the average annual circulation rate, the total number of circulations in period t is Dt and the cost per circulation is $\frac{C}{Dt}$. Dividing through the model by Dt gives:

$$\begin{aligned} \frac{C}{Dt} &= \frac{C_v r_t + C_w + C_u D r_t}{Dt} \\ &= \frac{C_w + C_v r_t}{Dt} + \frac{C_u r_t}{t} \\ &= \frac{C_u r_t}{t} + \frac{C_w + C_v r_t}{t} \frac{1}{D} \end{aligned} \quad [5]$$

The inverse of the circulation rate ($\frac{1}{D}$) is simply the number of years between circulations. Representing this component as Y, we have the simplified model used in this report:

$$U = \frac{C_u r_t}{t} + \frac{C_w + C_v r_t}{t} Y \quad [6]$$



YOU SHOULD KNOW ABOUT

BASIC LINEAR ALGEBRA WITH APPLICATIONS (1980)
Garfield C. Schmidt

INTRODUCTION TO VECTOR STOCHASTIC PROCESSES (1980)
Kenneth S. Miller

HYPOTHESIS TESTING WITH COMPLEX DISTRIBUTIONS (1980)
Kenneth S. Miller

GENERAL PROBLEM OF APPROXIMATION AND SPLINE FUNCTIONS (1979)
A.S.B. Holland & B.N. Sahney

ORDINARY DIFFERENTIAL EQUATIONS, 2nd Ed. (1980)
Jack K. Hale

MECHANICS OF CONTINUA, 2nd Ed. (1980)
A. Cemal Eringen

INTERMEDIATE ECONOMIC STATISTICS, 2nd Ed. (1980)
Karl A. Fox & Tej K. Kaul

HANDBOOK OF EFFECTIVE GRAPHIC & TABULAR COMMUNICATION (1980)
AND
MANAGEMENT HANDBOOK OF DECISION-ORIENTED STATISTICS (1980) Norbert L. Enrick

MASER AND LASER ENGINEERING (1980) T. Koryu Ishii

PHYSICAL BASIS OF MUSICAL SOUNDS (1980)
Joseph Morgan

ADHESIVES, ADHERENDS, ADHESION (1980)
Nicholas J. DeLollis

ERROR-FREE COMPUTATION (1980) Robert T. Gregory

ELECTRONIC STRUCTURE AND TRANSPORT PROPERTIES OF CRYSTALS (1980)
W.F. Leonard & T.L. Martin

FLUID POWER FOR INDUSTRIAL USE (2 Vols.) (1981)
Olaf A. Johnson

Complete price information available on request.

Our New Address
Please change your records.

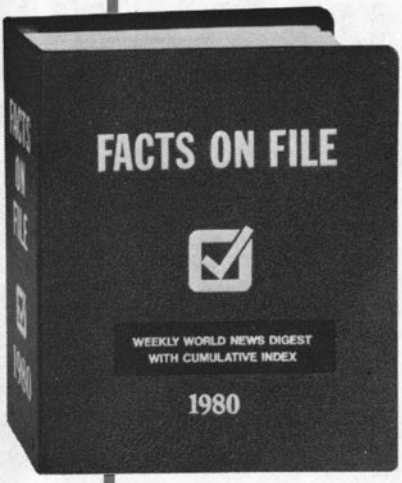
KRIEGER PUBLISHING COMPANY, INC.
P.O. Box 9542
Melbourne, FL 32901
(305) 724-9542

Letters

To the Editor:

In Greg Byerly's article "The Faculty Status of Academic Libraries in Ohio" (CRL September, 1980), we've got the makings of a significant study of faculty status. All that's missing is the viewpoint of the librarians who make up the group. Byerly hits the nail on the head when he admits that asking the directors to determine staff satisfaction with faculty status might not produce the desired information.

Why then not query the troops? How about a follow-up questionnaire to obtain a random sampling of Ohio academic librarians before the postal rates go up? Byerly got my attention, now how about finishing the job?—*Brian Alley, Assistant Director, University Libraries, Miami University, Oxford, Ohio.*



FACTS ON FILE®

"In all my years with the Weekly, my most steadfast and dependable assistant was Facts On File, which I own back to the first issues in the fall of 1940... Facts On File is unique and *indispensable*."—I.F. Stone

"Not since the 'invention' of the encyclopedia and the world almanac has such a useful reference tool been offered to the public as Facts On File."—William L. Shirer

"It is quite simply *indispensable*—to the journalist, to the novelist, and to anyone who is threatened by loss of historical balance."—Wm. F. Buckley, Jr.

"All librarians should rediscover it—it's a gold mine!"
—Jay Martin Poole

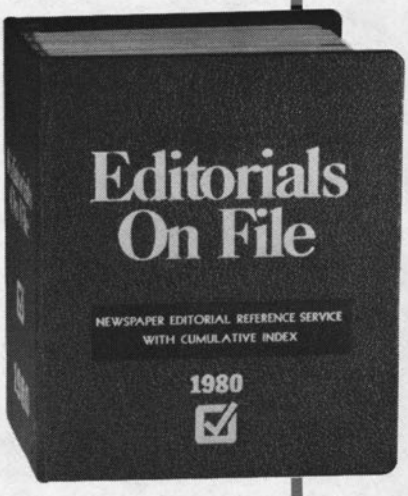
INDISPENSABLE is the word most often used to describe FACTS ON FILE®, the weekly news digest and index which since 1941 has covered the gamut of current events in the U.S. and abroad. Carefully and comprehensively assembled by a staff of skilled research editors from leading national and international news sources, Facts On File's current weekly service provides the single most powerful source available for rapid news research.

This sophisticated, easy-to-use reference system includes: • A weekly digest of national and foreign news, averaging twenty pages totaling 25,000 words • A twice-monthly cumulative index • A desk-top binder for the insertion of each week's digests and indexes • A 32-page four-color world atlas.

Used by government agencies, news services and broadcasting networks, magazines, publishers, leading corporations, and government and university research libraries, FACTS ON FILE is a necessary item on any well-stocked library shelf. In addition to reporting on all the major news stories of the day and any important developments in foreign and U.S. affairs, special subject coverage provides up-to-date reports on space, sports, obituaries, science, medicine, religion, education, crime, books, plays, films and persons in the news. No library should be without it!

Special price for college and university libraries: *$279.00 for annual subscription. (Regular subscription: $329.00)*

EDITORIALS ON FILE®



If you'd like to help your patrons and students to...

- Know what the best minds in the country are thinking about the topics on which they are writing papers
- Have a flood of supporting quotes ready to use in their next debate
- Have at their fingertips the swings of public opinion on any given issue

... then you are in need of a subscription to EDITORIALS ON FILE®, the ONLY source for a complete sampling of newspaper editorial opinion on a regular basis.

Since January of 1970 Editorials On File has recorded the FULL RANGE OF AMERICAN NEWSPAPER OPINION on all the MOST IMPORTANT ISSUES, covering every facet of every controversy. A TWICE-MONTHLY publication, each issue of Editorials On File combines approximately 200 of the period's most significant editorials—adding up to more than 5,000 EDITORIALS PER YEAR—from 140 LEADING NEWSPAPERS, plus a selection of editorial CARTOONS.

From sensitive social issues to taxes to foreign policy, Editorials On File is not only a unique general reference tool but a mine of information on specific research topics, providing the subscriber with a tremendous variety of viewpoints on a broad selection of crucial issues. For *students* at every level, college *professors*, political and social *scientists*, and *historians*, it is an invaluable aid.

Neatly stored in a buckram-bound BINDER, which is supplied with your subscription at no additional cost, Editorials On File is the handiest of references to use. In addition to a monthly INDEX, there are CUMULATIVE Indexes every 3 months: all have listings by both subject and person, and are generously CROSS-REFERENCED for rapid location of information.

Annual subscription: $199.

Order Directly From:

FACTS ON FILE, INC. 119 West 57th Street, New York, N.Y. 10019

COLLEGE & RESEARCH LIBRARIES

Recent Publications

BOOK REVIEWS

Levine, Arthur. ***Why Innovation Fails: The Institutionalization and Termination of Innovation in Higher Education.*** Albany, N.Y.: State Univ. of New York Pr., 1980. 224p. $29 cloth; $9.95 paper. LC 80-14950. ISBN 0-87395-412-2 cloth; 0-87395-421-1 paper.

For all its descriptive verbosity (only a dedicated aficionado of the inner workings of the State University of New York at Buffalo could possibly love it without qualification), this book does present an intriguing explanatory model of why innovation fails or succeeds in higher education. Arthur Levine's flirtation with model building comes early and late, in the opening and closing chapters, where he identifies those elements of innovation which, in tandem with the changing characteristics of a host institution, determine whether something new and different will survive the grace period that follows its provisional adoption by a college or university. In between these chapters there is an extremely detailed case study of the effort to institutionalize fourteen experimental colleges at SUNY-Buffalo

between the mid-1960s and the mid-1970s.

Levine's model is ambitious and extraordinary: ambitious because it attempts to explain both the failure and the success of accepted innovation, and extraordinary because it seeks to account not for the initial implementation of innovation but for its ultimate fate, a fate that must occupy some point on a continuum ranging from complete institutionalization to final termination. Despite the contrary impression left by the literature of higher education and that of academic librarianship, the tentative adoption of innovation by no means assures its long-term success or its thorough integration into the life of an institution.

Reflecting on developments at Buffalo and at twenty-six other institutions, including Brown and Stanford, both of which introduced innovations into their undergraduate programs during the 1960s, Levine concludes that an innovation endures when it is perceived as profitable by the host institution and, more importantly, when the personality of the innovation (a forgivable anthropomorphism) conforms in sufficient measure with the personality (i.e., the norms, the values, and the goals) of the organization into which the innovation is being introduced. If innovation is to persist, there must be congruence of personality. If there is to be congruence of personality, it is the institution's, not the innovation's, complex of norms, values, and goals that must undergo modification since an innovation is by definition new and different.

At SUNY-Buffalo, the choices were clear. The boundaries of institutional personality could be expanded to embrace the idiosyncratic personalities of the experimental colleges and to allow those personalities to pervade the parent institution; the boundaries could be expanded just enough to extend hospitality to the colleges as enclaves of the larger structure; they could be modestly contracted so as to coerce the colleges to conform to those academic traditions that were transcended at the trial creation of the colleges; or the boundaries could be severely contracted to induce such radical incongruence between the institutional personality founded on hard-core academic values and the more daring personality of the collegiate system as to result in the extermination of innovation.

The world view of those who made the choice at Buffalo was defined largely by the availability of resources. Between 1962 and 1970, the private, local, impoverished University of Buffalo had become the public, cosmopolitan, affluent SUNY at Buffalo. After 1970, SUNY-Buffalo remained public and cosmopolitan, but lost its affluence. An expansionist, hospitable weltanschauung among academic decision makers was replaced by a constrained, less inclusive view of the university's nature and mission. The central administration had had quite enough of the colleges, with their unorthodox outlook on faculty appointments, course content, and grading, and had decided that any institutionalization of the colleges would take the form of repatriation to traditional if not exclusively hard-core academic values. Most of the colleges complied with the requirements of resocialization with an institutional personality that became decidedly less buoyant and expansive than it had been at the time of the provisional establishment of the collegiate structure.

At Buffalo, the consciousness created in policy makers by financial exigency meant that the survival of the colleges would depend on the subordination of collegiate personality to institutional personality on resocialization. The personality of the collegiate innovation did not make a strong enough impact on the host institution to inspire either the diffusion of collegiate values throughout the university or the toleration of such values within autonomous enclaves. The colleges were ultimately seen as profitable (to abolish them was unthinkable) but somewhat incompatible with the imperatives of the institution. The task confronting SUNY-Buffalo was to bring its colleges back into the fold. In terms of Levine's model, then, the fate of innovation in higher education is determined less by the character of that innovation than by the relationship between the personality of the innovation and the changing personality of the institution within which it seeks to establish itself.

Levine does not claim very much for his model. While the model seems consistent with previous research, there is no assurance of its validity beyond Buffalo. Indeed, it was unclear to me whether the model was based on a review of the literature or constructed on the basis of evidence collected through observation, interviewing, and document analysis at Buffalo. If the former is true, the events at Buffalo constitute something of a test and affirmation of the model. If the latter is the case, the model is the product of retrospective induction and not susceptible to testing by resort to the materials from which it was erected. Finally, the author might have expanded a bit on the relationship between economic constraint and the narrowing of intellectual vision that occurred in the reformulation of institutional personality. In the main, however, Levine has done very well and his thoughtful volume is a fine contribution to the literature of higher education.—*Dan Bergen, University of Rhode Island, Kingston.*

Ellsworth, Ralph E. ***Ellsworth on Ellsworth: An Unchronological, Mostly True Account of Some Moments of Contact between "Library Science" and Me, since Our Confluence in 1931, with Appropriate Sidelights.*** Metuchen, N.J.: Scarecrow, 1980. 171p. $9.50. LC 80-12656. ISBN 0-8108-1311-4.

Obviously I, a westerner by birth as well as choice, cannot know intimately the feelings eastern librarians may have about Ralph Ellsworth, but in the West his image is, among some academic types, almost mystical. His imposing six-foot-plus frame and shock of white hair with full beard of the same color do not detract from that image. We could easily imagine him, dressed in a robe, as Gandalf helping us Frodo Bagginses through our trials.

After all, Ellsworth was one of the earliest proponents of modular library buildings, and he championed a national central cataloging system long before most academic librarians knew they had a problem bigger than they could handle individually. He was deeply involved in the creation of the Center for Research Libraries (first called the Midwest Inter-library Center), and he earned an international reputation as a library consultant. These, added to his reputation as an iconoclast willing to take on the eastern establishment, give him a special place in the pantheon of young librarians in the West in the 1960s and '70s.

This slender volume of memories hardly seems adequate for a man whose image is bigger than life. Yet as I read it, I began to feel a rightness about it for it is, like Ralph, the unvarnished truth. While even unusual modesty might have permitted an emphasis on the author's contribution, Ellsworth has never succumbed to that temptation. As he did in his career, he clearly states his intent and tells his story (more a series of events than a continuous tale), and leaves embellishment to the reader's imagination, or to other writers.

There are some delightful incidents recounted with obvious enthusiasm, and some stories that miss the mark when trying to reach a meaningful conclusion. All in all, these memoirs will be too brief for Ellsworth's admirers and certainly too casual for his detractors, but they provide a pleasant trip through some of the library world's more interesting events of the past forty years—and will suffice until the definitive biography is written!—*W. David Laird, University of Arizona, Tucson.*

McClure, Charles R. ***Information for Academic Library Decision-Making: The Case for Organizational Information Management.*** Contributions in Librarianship and Information Science, no.31. Westport, Conn.: Greenwood, 1980. 227p. $23.95. LC 79-8412. ISBN 0-313-21398-4.

Decision making, for some time the darling of management theorists, has finally made its formal debut into librarianship. Given the increasing complexity of academic libraries both in their organizational development and in their utilization of technology, it is no wonder that investigators should now begin to examine the process by which library management decisions are made. This is a useful and important research study, derived from the author's 1977 doctoral dissertation.

Several underlying assumptions of the study bear emphasis. "(1) The most important resource of the organization is the individual, and (2) every employee is a decision-maker" (p.186). McClure examines the patterns of factual information exchange among library staff members. He demonstrates that various staff groups access and utilize different types of information in a situation-specific manner. His concern, which is every administrator's concern, is that "if an organization employs twenty individuals who are contributing to the accomplishment of goals at only 75 percent of their potential, there is a loss of five positions in the organization" (p.171). He effectively argues that if more staff members have a wider and better selection of information on which to base their contribution to the total decision-making process, better and more responsive library services will be developed. This is not a new discovery, but what is significant in this book is that now there are empirical data to describe just how information is utilized in a number of libraries. Beyond that—without rehashing the old shibboleths about participative management—McClure provides practical guidance on how the opportunities for participation can be extended to more staff on the basis of enhanced "organizational information management."

The study draws on many of the most important user studies of management and technical information that have been produced over the last fifteen years. It also incorporates some useful concepts from, and references to, recent research on communication in organizations.

McClure points up one important and possibly surprising fact that may reflect more on the libraries in his sample population than on general practice in the field. He states with regard to management information that "of primary importance is the consideration that for many libraries there simply are no internal or statistical reports" (p.165). I can see how this may be the case in some academic libraries, but in most that I have known either as employee or consultant there has been an overwhelming flood of internal reports. Perhaps the point is really that there are few up-to-date, problem-oriented reports effectively employing empirical data to support management recommendations. This is certainly the case, although ARL's SPEC Kits (Systems and Procedures Exchange) have helped to address this problem somewhat through the sharing of certain reports of general applicability. Computer-based management information systems (MIS) are also needed to provide detailed library statistical data on demand.

The final point is not a criticism of the study, which is outstanding within the scope of its coverage. The research, however, deals primarily with the factual components of information necessary for managemental decision making. It is doubtless understood, though not explicitly acknowledged, that there are other information components of decision making that may in some cases be as important as or more important than concrete facts, i.e., the values, experience, and purposes of the contributors, as well as the historical and political characteristics of the setting.—*Robert S. Runyon, University of Nebraska at Omaha.*

"Special Issue on AACR2." James Thompson, ed. *Alternative Catalog Newsletter*, no.21 (June 1980). $5 (prepaid). ISSN 0161-7192. (Available from: Milton S. Eisenhower Library, Johns Hopkins University, Baltimore, MD 21218.)

In February 1980, editors of the *Alternative Catalog Newsletter*—convinced that

opposition to AACR2 was widespread on the grounds of cost of implemention and lack of conviction that the new rules greatly improved on AACR1—invited readers to submit their opinions. Issue 21 contains replies received.

As this review is being prepared, OCLC is "flipping" headings to AACR2 forms, and libraries everywhere are gearing up to cope with changes now less than a month away. If the editors hoped to stem this tide, they have probably failed. However, the issue makes interesting reading, and future revisers of catalog rules should take note.

Thirty-one persons responded. Eighteen were from small to medium-size university libraries. The rest represented special, college, and very large research libraries and one was a vendor of data-base services. Most writers were catalogers and heads of cataloging, with a sprinkling of library directors and heads of technical services. Thirteen took the opportunity to let off steam about the rules themselves. Six others, while generally positive about the code, favored deferring all or part of AACR2 until on-line authority control is in place, in order to lessen the devastating effect of massive changes on file maintenance. Only eleven were supportive of full implementation of AACR2 in January 1981, several on the grounds that it's far too late rather than because of overwhelming enthusiasm for the rules.

Not surprisingly, Michael Gorman, one of the editors of AACR2, takes to task "no-neck administrators" who prefer "dumb headings" to the cost of change. Several others, however, point to equally "dumb" portions of the code. Jim Thompson comments that, between the ambiguities and inconsistencies in AACR2 itself and the decisions on applying it at the Library of Congress, "it will be virtually impossible for a cataloger in any other library to create a record which another cataloger can accept with confidence." The hope that AACR2 would increase standardization seems not to have been achieved.

AACR2 may have had more input from the field than previous code revisions, but until publication only a few persons had seen a complete draft. Patrons, those for whom cataloging presumably is done, were not consulted at all. Administrators and others ask why impact studies were not done *before* adoption and why so much time and effort should be invested in the card catalog just before it ceases to exist.

Those who took up *ACN*'s invitation are, for the most part, thoughtful, rational librarians who will comply somehow with AACR2 because they have no choice. Most of them are dependent not only on the Library of Congress but also on data bases such as OCLC and RLIN. Not complying would be even more expensive. However, they raise serious questions about the wisdom of this step at this time.

Since rule revision is an ongoing process, AACR2 will not be the last code. In the future, drafts of proposed changes should be distributed and publicized more widely. Those who are highly critical then have the responsibility to express their concerns while there is still time.—*Mina H. Daniels, State University of New York at Albany.*

Osborn, Andrew D. ***Serial Publications: Their Place and Treatment in Libraries.*** 3d ed. Chicago: American Library Assn., 1980. 486p. $20. LC 80-11686. ISBN 0-8389-0299-5.

Eighteen years elapsed between the first and second editions of this book, but only seven years between the second and third editions. This is a recognition of the local, national, and international developments in librarianship, technology, and economics that have affected serials purchasing, cataloging, and accessibility. A thorough effort has been made to update names and editions in the text and in the chapter bibliographies, leaving the basic organization of the text unaltered. Osborn mentions the "growth of understanding in serials management," the financial crisis of the seventies, and progress in automation. However, the text does not give a full and integrated discussion of the concerns foremost in the minds of those working with serials and administering the overall collection: automation of local records, economics and budgeting, full text retrieval, and nontraditional formats including electronic journals.

The book still offers the best available introduction to the basic traditional procedures of serials processing within libraries.

The elusive definition of a serial is made in twenty pages of exceptions and illustrations. This thorough exposition is excellent because it is both enlightening for those who have never worked with serials and thorough enough to satisfy those who have had extensive experience in coping with them.

The chapter on serials selection gives basic principles which are true in their most general form. Collection development librarians will find little guidance here, other than an admonishment—based on a 1966/67 survey—that *New Serials Titles Classified Subject Arrangement* is not used extensively enough. Sources for current awareness beyond *NST-CSA* have been added to this edition but many have been excluded. The time-honored principles of completeness of files and the use of microforms in moderation are stated but not discussed in light of continuing realities of inflationary prices, inadequate budgets, and space problems. The earlier dictum that the bulk of a serials collection should come via gift and exchange has now been revised to apply only to research libraries. An area in need of expansion is the section on cooperative acquisitions. There is no mention or discussion of the prospects, problems, or needs that have brought about the proposals for a National Periodical Center and other large-scale network proposals.

One of the book's strengths is the thorough description of acquisitions procedures, especially manual check-in procedures, but the information on payment and budgeting is very brief. Moreover, there is no discussion of how to develop, implement, or manage the serials budget, which the author contends should be separate from other materials. A section on cancellation was added to this edition, but it is only a look at what had happened in the seventies.

The chapter on computer check-in has been totally rewritten because of recent advances. Yet underlying the chapter is a tone of misgiving about the advantages of automating serials files. Osborn's objection is high cost, and that is certainly a valid concern. However, he seems to think of cost in terms of the check-in function alone and maintains that the extras will have to justify the cost. That is also true, but what he considers extras are the real reason for automating: accessibility, claiming, linking of titles, integration of files, and management information.

The chapters devoted to cataloging were revised to include changes caused by the second edition of the *Anglo-American Cataloguing Rules* and the developments linked to computers. Added to the solid introduction to descriptive and subject cataloging is a comparison of the approaches to serial cataloging in AACR1 and AACR2. He lauds the allowance of increased title entry in AACR2 and its realization that libraries require different levels of cataloging, but he criticizes the AACR2 "preoccupation with card and computer cataloging for serials."

Discussion of computer cataloging is confined for the most part to a separate chapter. Although Osborn acknowledges the strengths of OCLC and CONSER, he is still skeptical of the role computers should play in serials cataloging. It is his contention that most serials need only level I cataloging, and that for most libraries, book catalogs would be sufficient for their needs. Sup-

plementary records that exist already for check-in and binding need not be duplicated in a card catalog.

Description of computer cataloging is limited to OCLC, CONSER, and computer-generated book catalogs. While these are adequate, it is unfortunate that discussion did not go a step further to investigate the integration of all serials processes in a single computer system, pros and cons. An area that deserves attention in future editions is reorganization of serial departments and redesign of work flow required by automation.

The section on binding remains little revised, but library binding is certainly a tradition and slow to change. However, this section contains an unnecessarily long historical look at bindery procedure in libraries, especially LC. Very little attention is given to developments in binding technology that now provide multiple options at variable costs for preservation of collections, and there is little discussion of the alternatives to binding. Microforms are not considered as an alternative or as a conservation mechanism, but as a necessary evil that is welcome only in moderation. Comments such as "when microforms must be resorted to" are indicative of that view, which may be justified in many specific cases, but should not be the tenor of the discussion.

There is much in this book that is very good, very true, and required reading for all students of serials. I regret that more of the present and future were not incorporated into it.—*Sharon Bonk, State University of New York at Albany.*

"Current Library Use Instruction." A. P. Marshall, issue ed. *Library Trends* 29:1–172 (Summer 1980). $5. ISSN 0024-2594.

This issue of *Library Trends*, edited by A. P. Marshall, contains eleven articles under the rubric of "Current Library Use Instruction." Overall, a great deal of what is said in this issue has been said before—and in some cases it has been said better elsewhere. Marshall states in his introduction that if some new thoughts or converts to library use instruction result from the issue, the effort is not wasted. Four articles stand out as having the potential to meet Marshall's hopes.

"Library Use Education: Current Prac-

tices and Trends" by Carolyn A. Kirkendall should be read first because it sets the tone for the entire issue. This article, better than any other, provides us with an idea of the progress of library instruction as it has evolved over the past decade. Of particular note is the expansion of interest in computer-assisted instruction at a time when both mini- and microcomputers are becoming popular. To a well-written, objective article, Kirkendall adds a strong personal note that we must continue the cooperative search for better library use instruction than has characterized the field to date.

Sharon Rogers, in her article entitled "Research Strategies: Bibliographic Instruction for Undergraduates," focuses on a major problem in library instruction. The central theme is that success in teaching research strategies hinges on the question of "what is to be taught." She provides a convincing argument for the primacy of the question by examining two specific aspects of her theme. They are whether to continue to teach sources or process, and whether to use library or discipline-related models. Rogers also addresses the issues of the proper time to teach, methodologies, and who should do the teaching. Since the article is concerned with the conceptual basis for teaching research strategies, it can provide a basis for both planning and evaluation.

The article entitled "The Computer as an Instructional Device: New Directions for Library User Education," by Gail Herndon Lawrence, presents a number of challenges that have the potential to totally rearrange library use instruction. The essence of her argument is that in the decentralized information environment of the future, library use instructors will act as creative middlemen who will assist in the formulation of data bases and provide feedback from users. At the same time, these librarians will assist users as information consultants in all aspects of data-base usage. This is a compact synopsis of a complex article. It should be read carefully so that librarians can begin to address the many challenges presented.

Richard Hume Werking in "Evaluating Bibliographic Education: A Review and Critique" provides a well-balanced analysis of a persisting problem. He goes through the entire range of evaluation questions: the why, where, and how, tests, surveys, quantitative measures, and proof that instruction is worthwhile. Each is kept in proper perspective, and Werking concludes that no clear national consensus will emerge. "Illuminative Evaluation," a relatively new technique, is discussed briefly as it is employed by European librarians. This article makes a good case for the necessity of evaluation and at the same time provides a good overview of the subject.

The four articles mentioned above are recommended for all who have an interest in library use instruction. Whether or not instruction librarians will find the balance of the issue useful will depend on their knowledge and experience in the field.—*Thomas Surprenant, University of Rhode Island, Kingston.*

Reform and Renewal in Higher Education: Implications for Library Instruction. Papers presented at the Ninth Annual Conference on Library Orientation for Academic Libraries, held at Eastern Michigan University, May 3–4, 1979. Carolyn A. Kirkendall, ed. Ann Arbor: Pierian Pr., 1980. 138p. $10. LC 80-81485. ISBN 0-87650-124-2.

While this conference was intended to explore the effects of the current back-to-basics movement on the field of library instruction, this is not reflected in the papers presented. There is no analysis of the movement or its philosophy of education, and no discussion of the relationship between the current trends in educational reform and their attitude toward library use and instruction. The major point seems to be that this interest in educational reform gives new hope but no assurances that library instruction may find a basis for inclusion in the general or liberal education curriculum. Despite this mismatch of title and content, the volume presents some useful, and in at least one instance, important insights.

Six of the articles report on library instruction developments at their authors' institutions. While some attempt to tie those to the back-to-basics movement (authors from Harvard, Northern Virginia Community College), others (from Lake Forest College, Tusculum College, Christopher New-

port College) are less self-consciously related to educational reform. All are useful descriptions of specific program developments which reflect a sophisticated course-related/course-integrated approach to library instruction. The articles reflect how the library can both respond to educational change and be a catalyst for change. This volume, like the previous proceedings, includes the EMU library director's introduction to the conference, Carolyn Kirkendall's state-of-LOEX (Library Orientation and Instruction Exchange—the clearinghouse for information on the conference subject), Hannelore B. Rader's annual annotated bibliography of the library orientation and instruction literature, as well as A. P. Marshall's always stirring "sermon" on librarians as educators.

Buried among these familiar aspects is Richard Dougherty's paper "Getting a Larger Slice of the Budget Pie for Library Instruction." This analysis of the real world of competition for a piece of the library's budget is on target. Every instruction librarian should read the article and take its points to heart.

Library and academic administrators can read this volume and sense the variety and high level of development that has occurred in the field. Library instruction is no longer the special program of a few institutions, and this volume reflects that. Practicing instruction librarians should scan the contents for those choice suggestions and specific ideas that will help them improve their programs. They will not be disappointed.—*Thomas G. Kirk, Berea College, Berea, Kentucky.*

Ristow, Walter W. ***The Emergence of Maps in Libraries.*** Hamden, Conn: Shoe String, 1980. 358p. $27.50. LC 80-12924. ISBN 0-208-01841-7.

Walter Ristow, retired chief of the Geography and Map Division in the Library of Congress, has been a prolific and valuable contributor to the literature in the field of maps over the past forty years. Though most of his published works are in the areas of cartobibliography and the history of cartography, he has also written numerous papers on various aspects of map librarianship. It is from the latter area that the selections for this book are drawn. Essentially a collection of reset reprints of articles written by Ristow from 1939 to 1979, *The Emergence of Maps in Libraries* provides fresh access to widely scattered, mostly out-of-print material. The thirty-five essays have been arranged in seven parts, touching on most of the daily issues facing custodians of map collections and also giving a history of the development of this branch of special librarianship. Well written and readable, these selections, while often a summary of the state of the art at the time they were written, provide the reader with bibliographical references for further exploration of the topic. The variety of periodicals from which these essays were taken and the varied levels of approach testify to the multidisciplined audience for cartographic information.

It is frequently illuminating to read articles on a particular subject published over the course of many years, and some sections of this volume are well served by this approach. "Part I: History and Development of Map Librarianship," written at ten-year intervals, for example, benefits from the immediacy of Ristow's assessments of the profession. The same is true in "Part IV: Reference and Bibliographical Services," where the selection of articles aptly demonstrates the correlation between historical events and the demands made on a cartographical collection and its keepers.

Some sections, however, are not so well served. "Part III: Technical Services" contains articles written from 1966 to 1979. The selections that discuss the Geography and Map Division's work and progress with machine-readable map cataloging were written in 1966 and 1971. Much has happened in this area of librarianship in nine years. Though the introduction informs the reader of the time gap in this particular instance and of the potential for similar anomalies in other areas, it would seem that the 1980 imprint places certain editorial responsibilities on the publisher—in this case, a postscript or a supplementary bibliography.

The user of this volume, then, must always keep in mind the year in which each selection was written. Some works cited by Ristow as being in the process of publication were indeed published and are now

now available at substantial savings through ACGIH!!!
an invaluable reference for every toxicologist

third revised edition

PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY

15% discount off publisher's price

VOLUME 2A: TOXICOLOGY 3rd EDITION

plus 25% ACGIH publication discount

Still in strong demand as a primary toxicology reference text, the classic 1548 page Second Edition of Volume 2: Toxicology, edited by Frank Patty has been succeeded by the new Third Edition. Because of the vast expansion of information in the field of toxicology, this all-new Third Edition is being published in three parts totaling approximately 3200 pages. Part A is now available (1392 pages). Part B is scheduled for mid-1981 (est. 900 pages) and Part C is to be ready early in 1982 (est. 900 pages).

CONTENTS—TOXICOLOGY, VOLUME 2A, 3RD EDITION, *EDITED BY G. D. CLAYTON AND F. E. CLAYTON.*

Industrial Toxicology: Retrospect and Prospect *(John A. Zapp, Jr.);* The Metals *(H. E. Stokinger);* Phosphorus, Selinium and Telliurium *(Robert P. Beliles);* Epoxy Compounds *(C. H. Hine, V. K. Rowe and E. R. White);* Esters *(E. E. Sandmeyer and C. J. Kirwin);* Aromatic Amino and Nitro Compounds *(Rodney R. Beard and Joseph Noe);* Ethers *(C. J. Kirwin and E. E. Sandmeyer);* Phenols and Phenolic Compounds *(William B. Deichmann and Moreno Keplinger);* Aldehydes and Acetals *(Michael J. Brabec);* Heterocyclic Nitrogen Compounds *(C. E. Reinhardt and M. R. Brittelli).*

Publisher's price $100.00 **ACGIH price $85.00 AND bonus 25% discount off any one ACGIH publication!**

ACGIH ALSO OFFERS TWO OTHER VOLUMES OF PATTY'S AT A SAVING...

Volume 1: General Principles, 3rd Edition, *edited by G. D. Clayton and F. E. Clayton.* Authorative handbook and reference. A complete guide to methods of evaluation, record keeping and control, new topics and developments, legislative and historical background. 27 contributors, 1466 pages (1978). *Publisher's price $99.50* **ACGIH price $84.50 AND bonus 25% discount off any one ACGIH publication!**

Volume 3: Theory and Rationale of Industrial Hygiene Practice, *edited by Lewis J. and Lester V. Cralley.* New, unique text on theory and rationale in industrial hygiene practice. Covers basic fundamentals of sampling theory, ionizing and non-ionizing radiation, chemical and biological agents, job safety and health law, and more. 28 expert contributors, 752 pages (1979). *Publisher's price $52.50* **ACGIH price $44.75 AND bonus 25% discount off any one ACGIH publication!**

ORDER YOUR COPIES OF PATTY'S THROUGH ACGIH AND SAVE 15% OFF THE REGULAR PUBLISHER'S PRICE PLUS RECEIVE A 25% DISCOUNT OFF THE ACGIH PUBLICATION OF YOUR CHOICE!!!

published by
WILEY-INTERSCIENCE
a division of
John Wiley & Sons, Inc.
605 Third Ave.,
New York, N.Y. 10016

PUBLICATIONS SECTION, ACGIH,

**Dept. K 6500 Glenway Ave., Bldg. D-5
Cincinnati, OH 45211 (513) 661-7881**

Send me the following volumes of Patty's Industrial Hygiene and Toxicology, 3rd Edition, plus information on ordering an ACGIH publication at my 25% discount...

	no. copies	amount
Volume 2A: Toxicology (single copy $85.00)*		
Volume 1: General Principles (single copy $84.50)*		
Volume 3: Theory & Rationale of Industrial Hygiene Practice (single copy $44.75)**		

amount enclosed _____
(Ohio residents include 4.5% sales tax)

Name _____

Affiliation _____

Street Address (No Shipments Made to P.O. Boxes) _____

City _____ State _____ Zip _____

Domestic orders shipped UPS prepaid. Foreign orders shipped at buyer's expense, surface or air (specify) and charges will be invoiced.

Approx. weights: *84 oz.; **45 oz.

01241-B

difficult to obtain; others either were never published at all or were published under very changed circumstances. An example is Lawrence Martin's biographical study of John Mitchell, which includes a cartobibliographical study of Mitchell's map of 1755. On page 215 of a piece first published in 1950, Ristow suggests the summer of 1952 as a probable date for the appearance of the Martin study. It was not published at that time, however. In Ristow's article "John Mitchell's Map . . ." in *A la Carte,** one discovers that Martin died before his manuscript could be edited and published, that the manuscript itself had disappeared, and that Ristow was obliged to compile the 1972 article on Mitchell using work previously published by Martin.

Given the variety of data available in this volume it is unfortunate that editorial shortcomings will reduce its usefulness. It is puzzling that Shoe String Press, a publisher of library materials, has omitted an index. Ristow's articles were originally written to stand alone, and there is a wealth of information included in each piece that is not reflected in its title. An index is always desirable, but in this case it is a necessity and the absence of even a simple guide is a serious oversight.

These omissions are more arresting because Shoe String Press went to the effort of resetting the texts of these thirty-five articles instead of publishing a facsimile reprint. There is no sign of any further input on their part, however. While the press' concern with form is appreciated, the lack of editorial concern with content is apparent.—*Susan L. Danforth, Brown University, Providence, Rhode Island.*

**A la Carte; Selected Papers on Maps and Atlases*, compiled by Walter William Ristow (Washington, D.C.: Library of Congress, 1972).

Clark, Brian, D.; Bisset, Ronald; and Wathern, Peter. ***Environmental Impact Assessment: A Bibliography with Abstracts.*** New York: Bowker, 1980. 516p. $59.95. LC 79-67625. ISBN 0-8352-1255-6.

The growth of environmental literature over the last decade has been little short of phenomenal. Librarians who deal with environmental collections and the users who need to access them are always glad to see a

new work that holds promise of systematizing at least a part of that burgeoning literature.

Environmental Impact Assessment: A Bibliography with Abstracts is an ambitious attempt along these lines. Specifically, the book seeks to order and explicate recent publications that deal with environmental study and evaluation as a decision-making process. The work is divided into five principal classified sections. The largest of these deals with assessment in the U.S., Canada, the United Kingdom, Australia, continental Europe, and selected other countries. Although there is attention to methodology both as theory and practice, the thrust of the work pertains to the legal bases and administrative processes involved in assessment. Together with the introductory material accompanying each section, this emphasis bespeaks an intended audience of assessment administrators who already have more than a passing knowledge of factors involved in the process. Unfortunately, even these users might need ample fortitude to grapple with the book: the prose is dense; the seventeen subsections lack internal classification; and, while the author index is excellent, the subject index contains only 367 points of entry and no cross-references. Furthermore, although each citation bears a unique alphanumeric designation, the lack of an alphabetic arrangement to the subsections, and therefore the alphanumeric entries, makes quick referral from either index difficult.

This volume also raises an unsettling question regarding sales promotion. As noted, the work's subtitle is *A Bibliography with Abstracts*. The publisher's announcement that recently came our way elaborated on this by describing the book as a "single, comprehensive, annotated bibliography" that covers, among other things, "information sources, abstracting all major references (over 1,000 of them!) with critical comment where appropriate." Indeed, the book does offer more than one thousand citations, all with full, clear bibliographic information. However, only 55 percent (595) of these are annotated, frequently to an extent unusual in bibliographies. The remaining 493 citations are altogether bare of summary or evaluation. Nor are these unannotated citations evenly distributed over subject areas. In seven of the seventeen subsections more than 50 percent of the citations are unannotated. Unfortunately, two of these subsections are expressly devoted to assessment in the U.S. Although there are substantial numbers of annotated U.S. entries elsewhere in the book, users focusing on the U.S. experience may find the going difficult. Conversely, users studying the assessment process as it functions in the United Kingdom or continental Europe may find it quite beneficial to their investigation.

In short, unlike most bibliographies, this work, while having reference value, will not lend itself readily to typical reference service in the college library. Its greatest value will probably be to the serious user who is compelled by need and blessed with time.—*Patricia B. Devlin, University of Michigan, Ann Arbor.*

Li, Tze-Chung. ***Social Science Reference Sources: A Practical Guide.*** Contributions in Librarianship and Information Science, no.30. Westport, Conn.: Greenwood, 1980. $25. LC 79-54052. ISBN 0-313-21473-5.

This book is the outgrowth of a course syllabus and is intended to be the text for a one-semester library science course. In part I the author discusses the social sciences in general. Part II is made up of eight chapters, each dealing with one of the social sciences. The arrangement for parts I and II is similar: an essay by the author on the nature of the science or sciences followed by sections on access to materials, sources of information, and major periodicals. Part I includes chapters on government publications, unpublished materials and data archives, and data bases.

Source materials are discussed in bibliographic essays with the standard, more important items separately listed. The author's own alphanumeric designation for each item would be helpful to students in compiling class notes and book cards. The author has included with the standard material descriptive information that is accurate, if sometimes superficial.

The arrangement of the text and the style of presentation reflect the author's preferences rather than a design for general use. Since the author has prepared the text primarily for library science students, much of

the information is introductory in nature. Those elements that make it valuable as a text tend to erode its value to the experienced librarian or researcher. The communication of useful information is further hindered by an obvious lack of good editorial work. Sentences are at times awkward and often overly long; the use of qualifiers is distracting to the reader who seeks at least a tone of authority in a guide to sources of information.

Anyone wishing to use this as a text should examine it carefully prior to a purchase commitment. For others it is neither a substitute for nor a supplement to the more standard Hoselitz and White.—*Joyce Ball, California State University, Sacramento.*

Hall, J. L., and Dewe, A. ***Online Information Retrieval, 1976–1979: An International Bibliography.*** Aslib Bibliography 10. London: Aslib, 1980. 230p. £16 members; £19.50 nonmembers. ISBN 0-85142-127-X.

This bibliography covers mainly "subject-oriented information retrieval from *bibliographic* files" and the authors make no claim to coverage of either computerized catalogs or numerical data bases.

It spans the period 1976–79, which saw a burgeoning of literature in this field. Much of the increase in the literature is accounted for by articles written by or for practitioners as contrasted with an emphasis on research in earlier years. Although even the beginning date of this bibliography is quite recent, the field has changed so rapidly that already some of the material listed is only of historical interest. Because a number of relevant items were reported to the authors after their cutoff date of June 1979, a supplement of more than 160 additional items was added without annotations and with only partial indexing. Adding the supplement brings the total to more than one thousand entries for the period beginning with mid-1976 and continuing through mid-1979.

Coverage is truly international. There are

entries from Japan (articles in Japanese), South Africa, Australia, India, and, of course, England, Europe, and the United States.

All types of material are included, with journal articles constituting 59 percent, conference and monograph literature 24 percent, report literature 10 percent, systems documents 4 percent, and miscellaneous 3 percent.

The entries are arranged alphabetically by first-named author. Most entries include a brief annotation. There are three indexes: a personal author index; a report number index; and a general subject index that includes the names of data bases, services, and systems, as well as subject topics. The authors decided to forego KWIC indexing, which, though cheaper, they thought would lack the advantages of a conventional index.

One of the most useful features of the bibliography is the selective indexing of the proceedings of professional meetings and conferences. But also in this area there are a few omissions; for example, there is no mention of the proceedings of the 1977 ALA/RASD/MARS program "Charging for Computer-Based Reference Services."

Articles from *Online*, *Database*, and *Online Review* are a significant part of the literature covered, but also included are relevant articles from many other U.S. and foreign journals. The report literature indexed includes ERIC documents, British Library Research and Development reports, NTIS documents, and other types of reports.

The bibliography does not claim to be exhaustive and it is not. Lacking are "fugitive" reports from on-line user groups, from ASIS midyear meetings, and other less widely distributed material. There seems to be little from data-base producers, though even the promotional brochures of the three major U.S. vendors are listed. These are not major shortcomings; it is a useful bibliography. Though expensive, it would certainly be very useful for students of library and information science and others with a serious interest in this field.—*Sara D. Knapp, State University of New York at Albany.*

New Trends in Documentation and Information. Proceedings of the 39th FID Congress, University of Edinburgh, 25–28 September 1978. Ed. by Peter J. Taylor. FID Publication 5–6. London: Aslib, 1980. 519p. ISBN 0-85142-128-8.

Though there are brave words on the cover—"New trends in documentation and information"—the book, like all conference proceedings, is an accident. It is published between covers only because certain people met in a certain city (Edinburgh, Scotland) at a certain time (September 1978) under the auspices of a certain association (Federation Internationale des Documentation). While there, they presented papers purportedly about the subject announced on the cover. They also met in hallways, bars, restaurants, cafés, and other exotic places—where the real ideas were exchanged, but, alas, never reported. Custom requires us to report these occasions formally to serve an archival function. This is fine, but to review these sixty papers (fifty-six in English, four in French), opening addresses, chairperson's reviews, and rapporteurs' comments as though they form a coherent book—that indeed is another matter. The reviewer can only pick out a few personally idiosyncratic points to comment on.

There were five substantive sessions: (1) theoretical bases; (2) technology and applications; (3) classification and other systems; (4) organization and management; (5) professional development, manpower, and education. H. East and N. Belkin (Great Britain) have a perceptive paper called "Advanced Technology and the Developing Countries: The Growing Gap" (p.129–33). Griffith, also of Great Britain, has a good tutorial paper on computer simulation (p.137–44), though the ending is weak.

As might be expected, A. Neelemeghan (India) presents some stimulating ideas in "Information-for-Action Systems: Challenge to Classification and Indexing" (p.203–13). As he points out, ". . . information needs of planners and decision makers are not structured according to 'subjects' in the usual sense of the term" (p.206). He does not go much beyond this, nor do the papers in that particular session. A pity, for this area will become a major concern during the coming decade: how to design systems responsive to questions other than usual substantive queries.

D. King (U.S.A.) contributes "Information Measurement as a Tool of Management" (p.367–75), a suggestive paper but one that is not quite clear. G. Carrion-Rodriquez of Mexico has a perceptive paper called "Forecasting Curricula . . . in the Developing Countries" (p.438–51), but unfortunately it is limited to science and technology and to academic libraries. To this reviewer, the best paper is B. Tell's (Sweden) "Changing Role of Those Working in the Library and Information Center" (p.426–71). He points out that ". . . the developing countries are neglecting the principle which should be guiding the new era, namely information responsiveness to user's needs" (p.463).

Certain papers, especially those on social processes, seem to be written as though there were no human beings, only bureaucratic systems. The papers, in general, seemed to be "talking" past each other, as though they were written on different planets and based on totally different assumptions. We can only hope that the pubs did a brisk business and more face-to-face meetings resulted. Very few papers, except the one by F. Lancaster of the U.S.A. (p.223–33), seemed to be aware of on-line interactive systems and their potential impact on the interfaces between human beings and systems. Nor did anyone seem to address the questions around the economics of information (except King): its measurement, uses, benefits, and costs. This reviewer, based on this collection, has the uncomfortable feeling that the "new trends" are terribly tentative, not very clear, and soon to be outdated.—*Robert S. Taylor, Syracuse University, Syracuse, New York.*

Bellamy, B. E. ***Private Presses & Publishing in England since 1945.*** New York: K. G. Saur; London: Clive Bingley, 1980. 168p. $33. ISBN 0-85157-297-9 Bingley; 0-89664-180-5 Saur.

It would be hard to quarrel with the major premise of this latest contribution to the bibliography of the private press, namely, that during the last three decades private printers have made a remarkable resurgence, particularly in England. While no private press today even remotely approaches the sort of grandiloquent gestures so nobly tendered by the Kelmscott, Ashendene, and Doves presses at the beginning of the century, still there is a refreshing enthusiasm in many that demands attention, if not always admiration. Bellamy is an admirer, but, unfortunately, not always attentive to the niceties of bibliographic arrangement one would naturally expect from a "practising librarian."

This volume, as the author notes in his introduction, is based on chapter 18 and 19 of Roderick Cave's *Private Press,* published in 1971 by Faber and Faber. A comparison of the two reveals that Cave's work has supplied not only the inspiration but much of the material as well, reworked and expanded as promised, but disappointingly derivative. Part two, consisting of a survey of eight contemporary British private presses, is what makes the book worth having. Biographical and critical information about contemporary private-press printers is frustratingly scarce; it is usually available only in journal literature and hard to get at, especially in smaller libraries. However, coupled with an appendix that lists the major titles published by the eight presses, Bellamy has compiled a useful guide to their work. Nevertheless, it is disappointing that he has chosen to describe a "representative cross-section of current practices," that of the many presses now active in England, only a small fraction are covered here in any detail. The primary source of bibliographical information about small private presses is an annual bibliography, *Private Press Books,* issued by the Private Libraries Association, though the last volume published (1976) puts it somewhat behind the pace. This series, supported by the Cave and Bellamy volumes, would go far toward establishing a nucleus reference collection on recent private-press work.

It would, I suppose, be ungrateful to measure this volume by the same standards of printing routinely practiced by the presses it attempts to describe. However, competent design, copy editing, and typesetting might reasonably have been expected from the publisher. The appendix of press imprints is a typographic muddle and could have been modeled more closely on the format in the *Private Press Books* annuals. Book citations

in the text and captions are haphazardly capitalized and some illustrations are ill-chosen. Why, for example, reproduce a page from the Basilisk Press' facsimile edition of the Kelmscott Chaucer, which through the various reproduction processes is at least six times removed from the original? Moreover, a bibliography that purports to be a guide to some of the most imaginative and finely crafted books being produced today must have at least a modicum of allusive charm. The whole private press philosophy is centered on craftsmanship and respect for the printed word. As one proprietor noted, "I am far more interested in having my work go into the hands of people who are *readers* and *book-lovers*, not the picky packrats who 'collect' press books. . . ."

Finally, though "printing for pleasure" is usually a private avocation, paradoxically it is a form of communication as well; it bears noting that the concluding chapter of Bellamy's book, "Reaching the Customer," presents a candid summary of the marketing problems that plague the "business end" of many private presses.—*David Pankow, Rochester Institute of Technology, Rochester, New York.*

Wynar, Bohdan S. ***Introduction to Cataloging and Classification.*** 6th ed. Littleton, Colo.: Libraries Unlimited, 1980. 657p. $22.40 cloth ($27 foreign); $14 paper ($17.50 foreign). LC 80-16426.

While reviewing a text on cataloging and classification could be viewed as an ordeal, it can be handled reasonably if the usual method of reading cover to cover is not followed. One possible method, which is followed here, is to read selected parts, try application of some of the instructions, compare with AACR2 (for descriptive cataloging), look for outstanding features or notable omissions, and compare with earlier editions.

It is interesting to see the many ways this work has changed since it began as a "preliminary edition" in 1964. In format it has changed from a slim mimeographed paperback to a hefty book with effective graphic design that is offered in cloth and paper. The contents, of course, have been changing over the years to treat catalog code revisions, new editions of Dewey and Sears, developments in subject analysis, and the changes wrought by bibliographic networking. In the latest edition these changes have dictated more a rewriting than a revision. There is still a healthy portion of background theory to support the main topics. Brief outlines of some of the lesser-used classification systems and newer methods of verbal analysis are included with examples, and the sections on Library of Congress subject headings and Library of Congress classification are considerably expanded and fully illustrated. The section on centralized services, cataloging routines, and catalog and shelflist filing is updated and expanded.

The descriptive cataloging section, which constitutes more than half of the book, is keyed to AACR2 by rule number and is illustrated by numerous examples. In recognition of the increasing use of machine-readable cataloging records, rule examples are no longer given in traditional card format. In some cases transcriptions or copies of the chief source of information are supplied as an aid to interpretation. The rules are conveyed by many direct quotes from AACR2, to which are added discussions of problem areas and words of advice regarding interpretation and possible future changes. A good deal of enumeration of rule numbers and captions without comment shows the problem of condensing the code to a size that would not overwhelm the rest of the book. Most of the omissions are understandable, but the slight treatment of capitalization and abbreviation places full burden on the examples.

This is a work of shared responsibility, with principal responsibility attributed to one person (*AACR2*, Rule 21.6B1). In the preface Bohdan Wynar gives credit to other authors for either "writing," "preparing," or "revising" many of the chapters. Arlene Taylor Dowell handled AACR2, while Jeanne Osborn covered document indexing, filing, centralized processing, and cataloging records and routines. Wynar was wise in his choice of these assisting authors. Their sections are well written and show excellent understanding of background, current practices, problems, and future trends.

The workability of the instructions and the effectiveness of the examples will have to be judged by teachers, students, and other users. There seems to be adequate information to give the reader a general idea of foundations and procedures, but students will certainly need a helping hand, and practicing catalogers should not find much they don't already know or have access to in standard tools. Continued revisions of this book attest to a certain demand, but it is hard to visualize the audience for this particular mix of introductory and advanced material. Covering the contents in one course would not be easy.

It should be noted that the text is fully documented and a bibliography of several pages on cataloging and classification aids is included. There is an excellent index and a glossary of terms and acronyms. The only mistake meriting mention is in the AACR2 section, in which .— is used to separate the items in a contents note, rather than — without the full stop. Only a former cataloger would quibble over a punctuation mark.—*Suzanne Massonneau, University of Vermont, Burlington, Vermont.*

Benge, Ronald Charles. ***Cultural Crisis and Libraries in the Third World.*** London: Clive Bingley; Hamden, Conn.: Linnet Books, 1979. 255p. $17.50. LC 79-12929. ISBN 0-85157-281-2 Bingley; 0-208-01668-6 Linnet.

In Nigeria, as in other Third World countries, "When social action is taken to create a new environment, then libraries will be a necessary part of it" (*Cultural Crisis and Libraries in the Third World*, p.242). At that time, it will be verified that Third World librarians can be strong forces for the welfare of their country. To do this, they must understand the meaning of development in their country, they must perceive how technology can be transferred appropriately to it, and they must avoid the pitfalls of education and mass communication imposed from without, in disregard of their country's native genius.

In developing this thesis through an essay-style approach, Ronald C. Benge devotes ten chapters to the general premises of development, education, and communication; then he turns, in the last five chapters, to the particulars concerning libraries and librarians. Such a procedure gives students of cultural crisis in the Third World food for thought, without, however, providing a thorough treatment of that crisis; and it gives students of libraries in the Third World some guiding principles, but only a minimum of facts about the library milieu there.

This essay also poises itself on the edge between the general and the particular by drawing extensively from a vast literature concerning Third World affairs in general and by reporting on the author's years of personal experience, especially in Nigeria. The strong affective tone of the work surely derives from the latter source, and the reader has the feeling that as long as the author had the praiseworthy intention of avoiding a dry monograph on his topic, he could have presented his insights and feelings with more power by giving greater emphasis to his Nigerian experience against a lower profile of general background knowledge.—*Paul Tutwiler, School of Library Science, University of Wisconsin–Milwaukee.*

Library Cooperation: Trends, Possibilities and Conditions. Proceedings of the Eighth Meeting of IATUL, Enschede, May 28–June 1, 1979. Edited by Nancy Fjallbrant. Goteborg, Sweden: IATUL, 1980. 223p. ISBN 91-7032-005-5.

This volume contains twenty-six papers on cooperation among institutions in various library activities although a few papers are single-institution oriented. The first and last papers are by officers of the British Library, with Maurice Line, director-general of the British Library Lending Division, starting off with "Is Cooperation a Good Thing?" and ending with a presentation by Michael Hill, director of the Science Reference Library of the British Library, entitled "To Cooperate or Not to Cooperate." Line, long a centralist, is doubtful, with his doubt being based on closely reasoned arguments based largely on assumptions rather than data. Hill draws his conclusions from various experiences that have uncovered pitfalls, struggles, and extensive effort required when institutions work together to attain a common benefit.

The standard cliché stating that "the papers are of uneven quality" certainly applies to this volume. Nevertheless, the majority of the papers contain useful observations and descriptions that would be helpful to anyone concerned with a cooperative venture. A half-dozen of the papers describe computer applications in different types of cooperative activity that will certainly be useful to those employing computers in obtaining common benefits rather than using traditional manual procedures. Of particular interest are two papers describing computerized networks, namely the PICA system in the Netherlands and the LIBRIS system in Sweden.

This volume does not resolve the multitudinous problems associated with library cooperation, nor is it a cooperator's vade mecum; indeed, such books do not exist. However, this book further contributes to an understanding of library cooperation and should be on the shelves of any library concerned with cooperation or having users concerned with cooperation.—*Frederick G. Kilgour, OCLC, Inc., Columbus, Ohio.*

ABSTRACTS

The following abstracts are based on those prepared by the ERIC Clearinghouse on Information Resources, School of Education, Syracuse University.

Documents with an ED number here may be ordered in either microfiche (MF) or paper copy (PC) from the ERIC Document Reproduction Service, P.O. Box 190, Arlington, VA 22210. Orders should include ED number, specify format desired, and include payment for document and posage.

Further information on ordering documents and on current postage charges may be obtained from a recent issue of Resources in Education.

Major U.S. Government Publications Systems: A Summary. By Melvin S. Day. Paper presented at the 45th Conference of the International Federation of Library Associations and Institutions, Copenhagen, Denmark, August 27–September 1, 1979. 1979. 11p. ED 187 310. MF—$0.83; PC—$1.82.

This paper focuses on the two agencies that distribute U.S. government publications in the largest number and on the greatest range of subjects: the Government Printing Office (GPO) and the National Technical Information Service (NTIS) of the U.S. Department of Commerce. Similarities and differences in operations are discussed as well as some of the issues surrounding the programs administered by these organizations.

How Librarians Can Influence Government Printers and Publishers and the Policies Which Govern Them. By Bernadine E. Abbott Hoduski. Paper presented at the Conference of the International Federation of Library Associations and Institutions (45th, Copenhagen, Denmark, August 27–September 1, 1979). 1979. 20p. ED 187 317. MF—$0.83; PC—$1.82.

Intended to aid librarians, this guide explores the methods librarians can and do use to influence government publishers, printers, distributors, and indexers of government information, as well as those who create and interpret the policies governing those programs. Case studies from Canada, England, and the United States are cited to illustrate the effectiveness of librarians' involvement with government information dissemination. Seventeen ways in which librarians can exert their influence are detailed, as are several areas in which such influence is needed. References are included.

A Clearing House for Library Literature—Past Experience and Future Possibilities. By Russel Bowden. Paper presented at the 45th Conference of the International Federation of Library Associations and Institutions, Copenhagen, Denmark, August 27–September 1, 1979. 1979. ED 187 318. MF—$0.83; PC—$1.82.

This report on the problems facing editors of professional information and library science journals in developing and developed countries suggests broad solutions that might help to transfer and make available the surplus of products in one geographic area to another in which such products are in short supply. Areas addressed include (1) historical background, (2) professional organizations, (3) the paucity of authors, (4) professional responsibilities, (5) editors' requirements, (6) unwanted articles, (7) the industrial world's problems, and (8) the need for a centralized clearinghouse.

New Patterns in Serials Publishing. By P. W. Lea. Paper presented at the Conference of the International Federation of Library Associations and Institutions (45th, Copenhagen, Denmark, August 27–September 1, 1979). 1979. 11p. ED 187 319. MF—$0.83; PC not available from EDRS.

This discussion reviews the effects of technology and economics on the publishing and influence of scholarly journals and their role as a communications medium. Areas covered include the functions of the primary journal, economic pressures, and the availability of new technologies such as computers, synoptic journals, microforms, word-processing equipment, electronic journals, and the digitized transmission of information. Implications of these innovations for the future of the scholarly journal are considered.

Information Technologies for the 1980's; Lasers and Microprocessors. By William D. Mathews. Paper presented at the 45th Conference of the International Federation of Library Associations and Institutions, Copenhagen, Denmark, August 27–September 1, 1979. 1979. 20p. ED 187 320. MF—$0.83; PC not available from EDRS.

This discussion of the development and ap-

plication of lasers and microprocessors to information processing stresses laser communication in relation to capacity, reliability, and cost and the advantages of this technology to real-time information access and information storage. The increased capabilities of microprocessors are reviewed, and a general assessment of the impact of these technologies is provided.

Articles on Library Instruction in Colleges and Universities, 1876–1932. No. 143. By John Mark Tucker. Graduate School of Library Science, University of Illinois, Urbana. 1980. 47p. ED 187 330. MF—$0.83; PC not available from EDRS.

Emphasizing journal literature from the late 1800s to the mid-1930s, this chronologically arranged compilation annotates articles about library instruction in colleges, universities, and schools of teacher education in the United States. It provides access to secondary materials for historians and librarians interested in academic library development and, more specifically, the origins and growth of library instruction. The introduction specifies the criteria used in the selection of entries, and both author and subject indexes are provided. An institution index identifies schools whose programs were described in many of the entries, as well as those institutions that responded to a questionnaire distributed by Henry R. Evans in 1914 but that are not mentioned in any other source.

The Bibliographic Databases in History. By Joyce Duncan. Paper presented at a Conference on Data Bases in the Humanities and the Social Sciences (Hanover, N.H., August 23–24, 1979). 1979. 20p. ED 187 331. MF—$0.83; PC—$1.82.

This examination of abstracting-indexing services for the field of history focuses on Historical Abstracts (HA) and American—History and Life (AHL), and their relationship to the American Bibliographical Center's Subject Profile Index (ABC-SPIndex). The history, scope, selection criteria, and classification arrangements of the two data bases are described, as is the indexing system of ABC-SPIndex. Sections also explore the processing of entries, the kinds of personnel involved in the bibliographic process, user input, and the cost-effective aspects of HA and AHL. The concluding section provides a summary of major points.

The 1979 Directory of College and University Libraries in New York State with Statistical Data for FY 1978. 12th ed. New York State Education Dept., Division of Library Development, Albany. 1979. 196p. ED 187 344. MF—$0.83; PC—$12.32.

This edition of a directory to 265 college and university libraries in New York State, compiled from data furnished by the State Education Department, includes address and telephone number, library director, institution president, number of volumes, number of periodical titles received, annual expenditures for library materials, annual total operating expenditures, number of professional staff, reference services librarian, interlibrary loan librarian, type of institution, 3Rs identifier, and publications issued by the library. Statistical data are summarized in the appended tables. Data on libraries are organized by size of collection, by highest earned degree granted, and by type of institution classification. The directory concludes with an alphabetical listing of head librarians.

The White House Conference on Library and Information Services, 1979. Summary, March 1980. National Commission on Libraries and Information Science, Washington, D.C. 1980. 86p. ED 187 347. MF—$0.83; PC—$6.32.

This report to the president of the United States presents a summary of the planning, proceedings, and resolutions of the White House Conference on Library and Information Services. Questions the delegates addressed to the conference included: do libraries, the traditional storehouses of information and knowledge, have a place in this fast-moving information age? If so, what should it be? When should information be private, when should it be without cost, and how should freedom of information principles be applied? Is there a need for a national information policy, and, if so, what elements should it include? Can we apply the principles of access to increase the free flow of information across national borders and through the barriers of conflicting governmental philosophies? Sixty-four resolutions developed by the conference set the following major goals: to reshape the library and information services to serve the people in more useful ways, to maintain local control of these services, and to insist on more economy and accountability from the institutions that provide these services. Separate sections of the report detail goals and objectives, organization and finance, technology resource sharing and education, special constituent concerns, international issues, and conference follow-up and recommendation.

ARL Annual Salary Survey, 1978–1979. Comp. by Gordon Fretwell. Association

of Research Libraries, Washington, D.C. 1980. 48p. ED 188 580. MF—$0.83; PC—$3.32.

This report includes tabulations of median and beginning professional salaries for budgeted positions in all Association of Research Libraries (ARL) member libraries and tables listing average salaries for filled positions in ARL's university libraries. The tables display information on average salaries by position, sex, minority-group membership, and geographical location, size, and type of institution. The report is divided into the following general headings: (1) salary levels for personnel in ARL libraries; (2) median and beginning professional salaries in ARL nonuniversity libraries; (3) average, median, and beginning professional salaries in ARL university libraries; and (4) distribution of personnel and average salaries for positions in ARL university libraries. Explanatory notes are provided.

A Library Instruction Program for Beginning Undergraduates. By Clark N. Hallman. University Library, University of Nebraska at Omaha. 1980. 36p. ED 188 633. MF—$0.83; PC—$3.32.

Intended to aid college instructors in need of library and bibliographic instruction presentations, this report describes a program that was designed by reference librarians at the University of Nebraska at Omaha to introduce beginning undergraduate students to the use of the university library and its resources. The report presents background information, as well as information on audiovisual presentations, library tours, and the *Library Orientation Workbook*, which is included in its entirety. The workbook contains sections on the card catalog, Library of Congress subject headings, encyclopedias, periodical indexes, location of magazine call numbers, newspaper indexes, abstracting services, and the monthly catalog of United States government publications, followed by exercises for the student. Chapters on grading the exercises and evaluating the success of the program are included in the report.

Materials Centers: A Dream of Their Future. By Lucille E. Kerr. University Library, Governors State University, Park Forest South, Ill. 1979. 29p. ED 188 635. MF—$0.83; PC—$3.32.

This paper presents an overview of the rationale of curriculum materials centers in academic libraries from their initial formation to their present status and envisions possible future roles. Terminology current in the field is defined, and materials centers are discussed in terms of curriculum materials centers and curriculum materials laboratories. A history of materials centers is traced from the 1920s when curriculum laboratories were first conceptualized, and the rationale provided focuses on two areas: the collection of teaching materials of all kinds, selected, organized, and maintained for use and study by students, faculty, and teachers; and the workshop or laboratory for developing and constructing curriculum and supplementary teaching materials. The first criteria is apparently being met, while the second varies qualitatively and quantitatively from institution to institution. Roles of other instructional materials centers are examined as each relates to a special subject field or to the teaching of specific groups of individuals. The future is postulated in terms of funds, human resources, and space. A possible enhancement of a materials center is presented as an addendum. The list of references cites twenty-six titles.

An Online Union List of Serials: Meeting the User Needs. By Barbara Settel and Tom Gearty. Paper presented at the National Online Information Meeting (New York, N.Y., March 25–27, 1980). 1980. 26p. ED 190 053. MF—$0.83; PC—$3.32.

This paper reports on the development of an on-line union catalog of serials using OCLC by the Central New York Library Resources Council. The project, now in the third of four years, is converting from a hard-copy union catalog of serials to an on-line catalog that will have the important advantage of immediate update. Using the OCLC interlibrary loan subsystem, the inquiring library may look at a display of library holdings and find up to five locations for a given serial—thirty of the forty-five libraries in the Central New York system currently have OCLC capability. The final year of the project will be used to complete the catalog, complete the transition from manual to on-line operation, and gain user acceptance. A users' manual furnishes instruction on reading bibliographic entries, preparation of serials requests, and submission of change information. A directory of participating libraries is included.

Collection Development in Ten Small Academic Libraries: A Report to the Council on Library Resources. By W. E. Hannaford, Jr. Council on Library Resources, Inc., Washington, D.C. 1979. 40p. ED 190 074. MF—$0.83; PC—$3.32.

This investigation of how ten small, private-college libraries go about collecting books focuses on the degree of responsibility and control those

libraries exercise over what is included in their collections. The findings and conclusions of the study are based upon interviews with library administrators and acquisitions librarians at Middlebury College, Bowdoin, Colby, Bates, Wellesley, Amherst, Trinity, Hamilton, Union, and Colgate. These colleges were chosen because of their similarities of purpose, staff size, student enrollment, faculty, number of library volumes added annually, library budgets, and library holdings. Chapters identify the objectives of the study, the methodology used, findings, conclusions, and recommendations. Appendixes include the application for a fellowship to conduct the study, the collection development questionnaire, and the tabulated answers.

Cooperative Collection Development Workshops. A Report. By Mary Alice Wills. Virginia State Council of Higher Education, Richmond. 1980. 31p. ED 190 134. MF—$0.83; PC—$3.32.

This report describes the Library Networking Committee's cooperative collection-development project, focusing on workshops that met to discuss five subject areas with the greatest potential for cooperative acquisition in northern Virginia: art resources, energy and environment, health science, law, and urban affairs. Workshops in the areas of local history and interlibrary loan also are summarized. Other aspects of the project outlined include use of the Virginia Library Association Region V newsletter, a summary workshop to review project activities, additional grant proposals, administration and progress reports, in-kind contributions, and project evaluation. Appendixes list the purposes and goals of the committee, the committee members, member institutions of the Consortium for Continuing Education in Northern Virginia, and project personnel. A map of the region is included.

The Emerging Internationalism of Online Information Retrieval. By Roger K. Summit. Paper presented at the National Online Information Meeting (New York, N.Y., March 25–27, 1980). 1980. [unp.] ED 190 103. MF—$0.83; PC—$1.82.

Until 1980 on-line information retrieval and dissemination services were for the most part based in the United States. Today, however, a variety of information services as well as packet-switched networks are emerging in other countries. Although U.S.-developed software still predominates in overall use, activity in Europe and other countries is developing rapidly. Information access services are coming to be seen not only as economically viable but also as an essential part of each country's national interests. A rivalry between government-subsidized services and competitive nonsubsidized services is emerging. Competitive services discourage monopolistic practices and offer the user protection from access controls and price exploitation with the assurance of high-quality service and supplier responsiveness. Government-subsidized services have encouraged tariff barriers and bilateral agreements detrimental to the user's interests; a user's bill of rights is needed in the areas of privacy, charges, domestic and international telecommunications, availability of services, access to source documents, and encouragement of competition.

The Impact of Automation on the Staff and Organization of a Medium-Sized Academic Library: A Case Study. By Gary Kraske. 1978. 16p. ED 190 153. MF—$0.83; PC—$1.82.

A case study examining the general effects of automating operations in a medium-size academic library on both the staff and the organization over a ten-year period reveals that the major impact has been the reappraisal of functional objectives and their accomplishment. In regard to personnel, there has been an overall savings in labor costs, and, while it has decreased professional-staff requirements, it has increased support-staff positions, many of which require greater skill, experience, and training. Major organizational effects have been recognized through the creation of two new units—systems development and operations—which have had a centralizing impact upon the library. The implications of these findings for other libraries are discussed.

Academic Reference Collection Development: Policy Statements. By Barbara Lehocky. Paper presented at the Missouri Library Association Annual Conference (September 28, 1979). 1979. 9p. ED 190 160. MF—$0.83; PC not available from EDRS.

This paper discusses the need for and provides guidelines for the preparation of policy statements on reference-collection development for academic libraries. Policy elements recommended for inclusion are statements on collection objectives, collection scope, physical size, types of material, selector roles, removal procedures, and interdepartmental relationships. Criteria for the selection, retention, or removal of reference materials are provided, and a bibliography of twelve titles is attached.

The Ecology of the Academic Library: Articulating Library Needs to the College

Planning Process. By Willis M. Hubbard. Paper presented at the Missouri Library Association Annual Conference (September 28, 1979). 1979. 15p. ED 190 161. MF—$0.83; PC not available from EDRS.

This paper discusses the importance of an analytic planning model to academic libraries in the context of campus-wide planning and briefly describes two projects funded through the Council for the Advancement of Small Colleges (CASC) to develop appropriate management products. The first project focused on the development and testing of analytic planning models capable of being replicated at other colleges; the second developed and tested a series of management information systems to provide the data for an analytic planning cycle, as well as other planning and data services. These projects resulted in the implementation of an analytic planning model on the campuses of most of the fifteen participating colleges and the generation of nine management modules (or data systems) capable of providing interinstitutional data for comparative purposes. These modules, which are available to interested colleges from CASC, cover library costs and services, personnel and compensation, instructional program, faculty activity, college goals and climate, student recruitment, student attrition, student financial aid, and fund raising. An outline of characteristics common to many analytic data systems and a description of the library-oriented module are included.

Online Forecasting Capabilities: Futurscan and Its Alternatives. By Herbert G. Gerjuoy and Gerald T. Owen. Paper presented at the National Online Information Meeting (New York, N.Y., March 25–27, 1980). 1980. 25p. ED 190 158. MF—$0.83; PC—$1.82.

This paper provides an overview of the field of on-line information retrieval systems whose data bases are programmed to predict future events. These systems rely on data of past events and use mathematical techniques such as regression analysis and statistical probability to provide forecast data. The history of these systems is traced through the advent of the IBM QUICKTRAN program in 1967 and descriptions of thirteen other predictive systems. Recent trend-impact analysis studies have led to the development of INTERAX and FUTURSCAN, which offer sophisticated and complex predictive on-line capabilities. A list of fifteen references is provided.

The Small Academic Library and the New Cooperation. By Harold F. Smith. Paper presented at the Missouri Library Association Annual Conference (September 28, 1979). 1979. 8p. ED 190 163. MF—$0.83; PC not available from EDRS.

Although spiraling costs and reduced budgets require that small academic libraries form clusters to share resources and services, consortia and library networks so far have taken only tentative or shallow steps in this direction. Real and meaningful steps can and must be taken to develop joint acquisition policies, effective and timely interlibrary loan procedures, cooperative reference services, and division of responsibility for periodicals. Resource utilization in the areas of technical processes, staff, and equipment can be improved, and librarians need to adopt an attitude of interdependency and shared mutual responsibility. Clusters of five to ten libraries within a limited geographic proximity offer a feasible framework with an individual in each committed to seek out, develop, and maintain cooperative programs.

The IBM System 7 On-Line Circulation System at Slippery Rock State College. By Richard J. Wool. Slippery Rock State College, Pa. 1980. 58p. ED 190 095. MF—$0.83; PC—$4.82.

This article describes and evaluates the IBM System 7 automated circulation system in use at Slippery Rock State College Library since 1973. Background information is furnished on the library and its locale as well as the general rationale and objectives for automated circulation systems. The presentation of the IBM S/7 includes (1) reasons for its selection; (2) transaction override; (3) descriptions of reports and lists such as daily circulation, overdue, fines, statistical summaries, and special printouts; (4) descriptions of hardware and software; (5) historical developments; (6) evaluation of the system and its components; (7) enumeration of system problems; (8) considerations for future development; and (9) costs. This seven-year review serves to summarize a state in automated library systems. Appendixes provide details of operating features, statistical data, reports, and sample forms.

Experimental Online Catalog for the Dartmouth College Library. By Emily Gallup Fayen. Dartmouth College, Hanover, N.H. 1980. 13p. ED 190 145. MF—$0.83; PC—$1.82.

This on-line pilot project demonstrates the feasibility of using the OCLC transaction tapes to create an on-line catalog and the utility of the BRS data-base structure for loading this data and for on-line searching. It also shows the feasibility of a user-cordial interface for patrons and for staff

and provides an opportunity to test many factors involved in developing a successful system for use by students, faculty, and staff, as well as trained on-line searchers. Preliminary results from a series of controlled experiments using the on-line catalog and the card catalog show that recall is similar. The on-line catalog is generally much more effective and faster for those topics not adequately represented by LC subject headings, but the card catalog may be more efficient for very simple author/title search. Further experiments with the on-line catalog at Dartmouth will continue, thus enabling a decision as to whether it is an acceptable alternative to the card catalog. Current planning is to use both for at least one calendar year or until a clear choice is evident.

OTHER PUBLICATIONS OF INTEREST TO ACADEMIC LIBRARIANS

Aaron, Shirley L. *A Study of Combined School-Public Libraries*. School Media Centers: Focus on Trends and Issues, no.6. Chicago: American Library Assn., 1980. 120p. $7. LC 80-19785. ISBN 0-8389-3247-9.

African Book World and Press. 2d ed. Ed. by Hans M. Zell. Detroit: Gale, 1980. 253p. $75. LC 76-56994. ISBN 0-8103-0990-4.

American Book Publishing Record Cumulative 1876–1949: An American National Bibliography. A Cumulation of American Book Production for the Years 1876–1949, in 15 Volumes, as Catalogued by the Library of Congress and the National Union Catalog. Arranged by Subject according to Dewey Decimal Classification and Indexed by Author and Title with a Separate Subject Guide including Library of Congress Subject Tracings, Dewey Decimal Classification Numbers and Library of Congress Classification Numbers. New York: Bowker, 1980. 17,219p. 15v. $1,975/set plus shipping and handling. LC 66-19741. ISBN 0-8352-1245-9. ISSN 0000-0639.

American Novelists Since World War II. Second Series. Ed. by James E. Kibler, Jr. Dictionary of Literary Biography, V.6. Cumulative Index to Volumes 1–6 of the Dictionary of Literary Biography. Detroit: Gale, 1980. 404p. $54. LC 80-22495. ISBN 0-8103-0908-4.

Articles on the Middle East, 1947–1971: A Cumulation of the Bibliographies from the Middle East Journal. Ed. by Peter M. Rossi and Wayne E. White. Ann Arbor, Mich.: Pierian Pr., 1980 4v. 1,645p. $160/set. LC 79-91337. ISBN 0-87650-030-0.

The Bibliography of Museum and Art Gallery Publications and Audio-Visual Aids in Great Britain and Ireland 1979/80. Ed. by Michael Roulstone. Westport, Conn.: Meckler Books, 1980. 500p. $89.50. LC 80-15709. ISBN 0-930466-23-3.

Black Women and Religion: A Bibliography. Comp. by Marilyn Richardson. A Publication in Black Studies. Boston: G. K. Hall, 1980. 139p. LC 80-20457. ISBN 0-8161-8087-3.

Books in Series, Third Edition. Original, Reprinted, In-Print, and Out-of-Print Books. Published or Distributed in the U.S. In Popular, Scholarly, and Professional Series. New York: Bowker, 1981. 3v. 6,563p. $150/set plus shipping and handling. LC 76-41665. ISBN 0-8352-1314-5. ISSN 0000-0515.

British Education Theses Index (BETI) 1950–1980. Ed. by J. R. V. Johnston and Joan V. Marder. Leicester, England: Librarians of Institutes and Schools of Education, 1980. ISBN 0-901992-07-2. Cumulation One, 1959–74, £20; Cumulation Two, 1950–80, £35 (£13 to purchasers of Cumulation One); Cumulations One and Two, 1950–80, £33. Microfiche, 48×, with a full-size hard-copy introduction. (Available from: Michael Argles [Treasurer, LISE], c/o University Library, Lancaster, LA1 4YH, England.)

Checklist of British Official Serial Publications 1980. 11th ed. Ed. by Eve Johansson and Janet Pearson. London: British Library Reference Division, 1980. 102p. £5. ISBN 0-904654-53-2. ISSN 0084-8085. (Available from: British Library, Reference Division Publications, Great Russell St., London WC1B 3DG, England.)

Childhood in Poetry: A Catalogue, with Biographical and Critical Annotations, of the Books of English and American Poets Comprising the Shaw Childhood in Poetry Collection, Library of the Florida State University; with Lists of the Poems That Relate to Childhood, Notes, and Index. Third Supplement. By John Mackay Shaw. Detroit: Gale, 1980. 671p. $75. LC 80-22588. ISBN 0-8103-0480-5.

Columbia Dictionary of Modern European Literature. 2d ed. Ed. by Jean-Albert Bédé and William B. Edgerton. New York: Columbia Univ. Pr., 1980. 895p. $50. LC 80-17082. ISBN 0-231-03717-1.

Commonwealth Children's Literature. Checklists on Commonwealth Literature, no.1. London: Commonwealth Institute, 1979. 56p. £1 plus shipping costs. ISBN 0-900906-86-3. ISSN 0143-5477.

A guide to the holdings of the Library and Resource Centre, Commonwealth Institute, Kensington High St., London W8 6NQ, England.

Comprehensive Guide to the Manuscripts Collection and to the Personal Papers in the University Archives. Comp. by Marilyn Priestley. Seattle, Wash.: Univ. of Washington Libraries, 1980. $25.

Contemporary Authors: A Bio-Bibiliographical Guide to Current Writers in Fiction, General Nonfiction, Poetry, Journalism, Drama, Motion Pictures, Television, and Other Fields. New Revision Series, V.1. Ed. by Ann Evory. Detroit: Gale, 1981. 736p. $58. LC 62-52046. ISBN 0-8103-1930-6.

Contemporary Authors: A Bio-Bibliographical Guide to Current Writers in Fiction, General Nonfiction, Poetry, Journalism, Drama, Motion Pictures, Television, and Other Fields. V.97–100 in the continuing series. Ed. by Frances Locher. Detroit: Gale, 1980. 584p. plus 183p. cumulative index to the *CA* series. $58. LC 62-52046. ISBN 0-8103-1900-4.

Contemporary Literary Criticism: Excerpts from Criticism of the Works of Today's Novelists, Poets, Playwrights, and Other Creative Writers. V.15. Ed. by Sharon R. Gunton and Laurie Lanzen Harris. Detroit: Gale, 1980. 598p. $58. LC 76-38938. ISBN 0-8103-0103-2.

Dictionary of Foreign Quotations. Comp. by Robert and Mary Collison. New York: Facts On File, 1980. 407p. $29.95. ISBN 0-87196-428-7.

Education in the Use of Libraries and Information: A Bibliography. Part 2: 1955–1969. Comp. by Ian Malley. Leicestershire, England: Ian Malley, 1980. 55p. £1.50. ISBN 0-904641-15-5. (Ian Malley, British Library Information Office for User Education, Library, Loughborough University of Technology, Loughborough, Leicestershire LE11 3TU, England.)

Educational Film Locator of the Consortium of University Film Centers and R. R. Bowker Company. 2d ed. New York: Bowker, 1980. 2,611p. $50 plus shipping and handling. LC 78-67185. ISBN 0-8352-1295-5. ISSN 0000-0590.

English English. 2d ed. Ed. by Norman W. Schur. Detroit: Gale, 1980. 332p. $28. LC 77-20390. ISBN 0-930454-05-7.

The Far East and Australasia 1980–81: A Survey and Directory of Asia and the Pacific. 12th ed. London: Europa Publications Ltd., 1980. 1,365p. $100. LC 74-417170. ISBN 0-905118-51-0. ISSN 0071-3791.

Financial Aspects of Library and Information Services: A Bibliography. Comp. by Alan Cooper. CLAIM Report no.5. Loughborough, England: Centre for Library and Information Management (CLAIM), 1980. 117p. £10 paper. ISBN 0-904924-23-8. (Centre for Library and Information Management, Department of Library and Information, Loughborough Uni-

versity of Technology, Loughborough, Leicestershire LE11 3TU, England.)

The Future: A Guide to Information Sources. 2d ed. Comp. and ed. by the World Future Society. Washington, D.C.: World Future Society, 1979. $25. 722p. ISBN 0-930242-07-6.

Future Survey Annual 1979: A Guide to the Recent Literature of Trends, Forecasts, and Policy Proposals. Ed. by Michael Marien. Washington, D.C.: World Future Society, 1980. 255p. $25. ISBN 0-930242-10-6.

Garraty, John A.; Klemperer, Lily Von; Taylor, Cyril J. H. *The New Guide to Study Abroad*. 1981–1982 ed. New York: Harper, 1981. 464p. $16.95. LC 77-11533. ISBN 0-06-011423-1 hardcover; 0-06-090849-1 paper.

Historical Rhetoric: An Annotated Bibliography of Selected Sources in English. Ed. by Winifred Bryan Horner. A Reference Publication in Literature. Boston: G. K. Hall, 1980. 294p. LC 80-21947. ISBN 0-8161-8191-8.

Hoffmann, Christa F. B. *Getting Ready for AACR2: The Cataloger's Guide*. White Plains, N.Y.: Knowledge Industry Publications, 1980. 225p. $24.50. LC 80-15168. ISBN 0-914236-64-4.

Indexing and Abstracting: An International Bibliography. Comp. by Hans H. Wellisch. Santa Barbara, Calif.: ABC-Clio, 1980. 320p. $22.75. LC 80-11907. ISBN 0-87436-300-4.

Indian Literature in English: A Checklist. Comp. by Ronald J. Warwick. Checklists on Commonwealth Literature, no.5. London: Commonwealth Institute, 1979. 87p. £1 plus shipping costs. ISSN 0143-5477. ISBN 0-900906-88-X.
A guide to the holdings of the Library and Resource Centre, Commonwealth Institute, Kensington High St., London W8 6NQ, England.

International Who's Who in Music and Musicians' Directory. 9th ed. Ed. by Adrian Gaster. Cambridge: Melrose Press, Ltd., 1980. 960p. $90. LC 73-91185. ISBN 0-900332-51-4. (Distributed in U.S. by Gale Research Co.)

Jones, Peter. *A Reader's Guide to Fifty American Poets*. Reader's Guide Series. London: Heinemann; Totowa, N.J.: Barnes & Noble, 1980. 386p. $16.50. ISBN 0-435-18491-1 Heinemann; 0-389-20140-5 Barnes & Noble.
First published 1980 by Pan Books as *An Introduction to Fifty American Poets* in the Pan Literature Guides Series.

Jules Verne: A Primary and Secondary Bibliography. Comp. by Edward J. Gallagher. Masters of Science Fiction and Fantasy. Boston: G. K. Hall, 1980. 387p. LC 80-20206. ISBN 0-8161-8106-3.

Land Tenure and Agrarian Reform in East and Southeast Asia: An Annotated Bibliography. Comp. by the staff of the Land Tenure Center

Library under the direction of Teresa J. Anderson. A Reference Publication in Asian Studies. Boston: G. K. Hall, 1980. 557p. LC 80-18049. ISBN 0-8161-8221-3.

Livingston, Barbara, issue ed. *New Public Library Buildings/II*. LJ Special Report #17. New York: Bowker, 1980. 64p. $7; $5.95 prepaid. ISBN 0-8352-1338-2. ISSB 0362-448X.

Microform Market Place 1980–1981: An International Directory of Micropublishing. Ed. by Ardis Voegelin-Carleton. Westport, Conn.: Microform Review Inc., 1980. 212p. $20.95. LC 74-4811. ISBN 0-913672-37-8.

Nigerian Literature: A Bibliography of Criticism, 1952–1976. Comp. by Claudia Baldwin. Bibliographies and Guides in African Studies. Boston: G. K. Hall, 1980. 147p. LC 80-18715. ISBN 0-8161-8418-6.

Parlato, Salvatore J. *Films ex Libris: Literature in 16mm and Video*. Jefferson, N.C.: McFarland & Company, 1980. 271p. $15.95. LC 80-10181. ISBN 0-89950-006-4.

Personal Name Index to the 1856 City Directories of Iowa. Ed. by Elsie L. Sopp. Gale Genealogy and Local History Series, V.13. Detroit: Gale, 1980. 154p. $30. LC 80-25085. ISBN 0-8103-1486-X.

Personal Social Services Bibliography. 2d ed. Comp. by Gillian Stewart. London: The Library Association, 1980. 129p. $19.50. ISBN 0-85365-513-8. (Distributed by: Oryx Press, 2214 North Central at Encanto, Phoenix, AZ 85004.)

Piele, Linda J.; Tyson, John C.; and Sheffey, Michael B. *Materials & Methods for Business Research*. New York: The Library Works, 1980. 180p. $14.95. LC 80-20332. ISBN 0-918212-15-4.

Progressive Reform: A Guide to Information Sources. Ed. by John D. Buenker. American Government and History Information Guide Series, V.8. Detroit: Gale, 1980. 366p. $30. LC 80-23992. ISBN 0-8103-1485-1.

Public Administration in American Society: A Guide to Information Sources. Ed. by John E. Rouse, Jr. American Government and History Information Guide Series, V.11. Detroit: Gale, 1980. 553p. $30. LC 80-24633. ISBN 0-8103-1424-X.

Religious Books and Serials in Print 1980–1981. Books: Sacred Works Index. Subject Index. Author Index. Serials: Subject Index. Title Index. New York: Bowker, 1980. 1,326p. $42 plus shipping and handling. LC 78-63633. ISBN 0-8352-1306-4. ISSN 0000-0612.

Reverse Acronyms, Initialisms, and Abbreviations Dictionary: A Companion Volume to the Acronyms, Initialisms, and Abbreviations Dictionary, with Terms Arranged Alphabetically by Meaning of Acronym, Initialism, or Abbreviation. Ed. by Ellen T. Crowley. (V.3 of the

7th ed. of *Acronyms, Initialisms, and Abbreviations Dictionary.*) Detroit: Gale, 1980. 1,314p. $74. ISSN 0270-4390. ISBN 0-8103-0506-2.

Roger Zelazny: A Primary and Secondary Bibliography. Comp. by Joseph L. Sanders. Masters of Science Fiction and Fantasy. Boston: G. K. Hall, 1980. 154p. LC 80-20253. ISBN 0-8161-8081-4.

The Romantic Movement: A Selective and Critical Bibliography for 1979. Comp. by David V. Erdman. Garland Reference Library of the Humanities, V.211. New York: Garland Publishing, 1980. 350p. $35. LC 80-8494. ISBN 0-8240-9512-X.

Samuel R. Delany: A Primary and Secondary Bibliography, 1962–1979. Comp. by Michael W. Peplow and Robert S. Bravard. Masters of Science Fiction and Fantasy. Boston: G. K. Hall, 1980. 178p. LC 80-20108. ISBN 0-8161-8054-7.

Samuel Richardson: An Annotated Bibliography of Critical Studies. Comp. by Richard Gordon Hannaford. Garland Reference Library of the Humanities, V.150. New York and London: Garland Publishing, 1980. 292p. LC 79-7916. ISBN 0-8240-9531-6.

Schmidt, Michael. *A Reader's Guide to Fifty British Poets 1300–1900*. Reader's Guide Series. London: Heinemann; Totowa, N.J.: Barnes & Noble, 1980. 430p. $16.50. ISBN 0-435-18811-9 Heinemann; 0-389-20137-5 Barnes & Noble.

First published 1980 by Pan Books as *An Introduction to Fifty British Poets 1300–1900* in the Pan Literature Guides Series.

Scientific and Technical Books and Serials in Print 1981. Books: Subject Index, Author Index, Title Index. Serials: Subject Index, Title Index. New York: Bowker, 1980. 2,829p. $59. LC 78-640940. ISSB 0000-054X. ISBN 0-8352-1313-7.

Seymour-Smith, Martin. *A Reader's Guide to Fifty European Novels*. Reader's Guide Series. London: Heinemann; Totowa, N.J.: Barnes & Noble, 1980. 528p. $19.95. ISBN 0-435-18812-7 Heinemann; 0-389-20138-3 Barnes & Noble.

First published 1980 by Pan Books as *An Introduction to Fifty European Novels* in the Pan Literature Guides Series.

The Southern Books Competition at Twenty-five: A Silver Anniversary Tribute. Comp. by John David Marshall. Jackson, Miss.: Howick House, 1980. 207p. $15. (Available from: Howick House, P.O. Box 20483, Jackson, MS 39209.)

Stained Glass: A Guide to Information Sources. Ed. by Darlene Brady and William Serban. Art and Architecture Information Guide Series, V.10. Detroit: Gale, 1980. 572p. $30. LC 79-23712. ISBN 0-8103-1445-2.

Stanley Kubrick: A Guide to References and Resources. Comp. by Wallace Coyle. A Reference Publication in Film. Boston: G. K. Hall, 1980. 155p. LC 80-20649. ISBN 0-8161-8058-X.

Statistics and Econometrics: A Guide to Information Sources. Ed. by Joseph Zaremba. Economics Information Guide Series, V.15. Detroit: Gale, 1980. 701p. $30. LC 80-24832. ISBN 0-8103-1466-5.

Technology and Values in American Civilization: A Guide to Information Sources. Ed. by Stephen H. Cutcliffe. American Studies Information Guide Series, V.9. Detroit: Gale, 1980. 704p. $30. LC 80-23728. ISBN 0-8103-1475-4.

The Third Americans: A Select Bibliography on Asians in America with Annotations. Comp. by Te-kong Tong with the assistance of Robert Wu. Oak Park, Ill.: CHCUS, Inc., 1980. 69p. LC 80-66854. ISBN 0-937256-00-5.

Thompson, John Cargill. *A Reader's Guide to Fifty British Plays 1660–1900*. Reader's Guide Series. London: Heinemann; Totowa, N.J.: Barnes & Noble, 1980. 448p. $16.50. ISBN 0-435-18881-X Heinemann; 0-389-20139-1 Barnes & Noble.

First published 1980 by Pan Books as *An Introduction to Fifty British Plays 1660–1900* in the Pan Literature Guides Series.

To St. Lucia, with Love: The Bibliography of a Library Collection for the People of St. Lucia upon Achieving Independence. Presented by the People of the United States of America. Comp. by Robert V. Vaughn. Frederiksted, St. Croix, V.I.: AYE-AYE Press, 1980. 49p. $6.65. (Available from: AYE-AYE Press, P.O. Box 1224, Kingshill, St. Croix, VI 00850 U.S.A.)

Training and Development Organizations Directory: A Reference Work Describing Firms, Institutes, and Other Agencies Offering Training, Professional, and Personal Development Programs for Business, Industry, and Government. 2d ed. Paul Wasserman, managing ed. Detroit: Gale, 1980. 955p. $90. LC 80-23591. ISBN 0-8103-0314-0.

A Union List of Microform Collections in Nassau and Suffolk County Libraries. Comp. by Richard P. Feinberg. Occasional Paper no.2. Stony Brook, N.Y.: The Libraries, SUNY at Stony Brook, 1980. 220p. $3. (Distributed by the Long Island Library Resources Council, Bellport, N.Y.)

U.S. Book Publishing Yearbook and Directory 1980–81. White Plains, N.Y.: Knowledge Industry Publications, 1980. 246p. $35. LC 79-649219. ISBN 0-914236-63-6.

U.S. Foreign Relations: A Guide to Information Sources. Ed. by Elmer Pischke. American Government and History Information Guide Series, V.6. Detroit: Gale, 1980. 715p. $30. LC 74-11516. ISBN 0-8103-1204-2.

U.S. Higher Education: A Guide to Information Sources. Ed. by Franklin Parker. Education Information Guide Series, V.9. Detroit: Gale, 1980. 675p. $30. LC 80-21959. ISBN 0-8103-1476-2.

Urban Law. A Guide to Information Sources. Ed. by Thomas P. Murphy. Urban Studies Information Guide Series, V.11. Detroit: Gale, 1980. 322p. $30. LC 80-19138. ISBN 0-8103-1409-6.

The Video Source Book. 2d ed. New York: National Video Clearinghouse, Inc., 1980. 1,262p. $65. LC 80-52459. (Distributed by Gale Research Co.)

Women: A Bibliography of Bibliographies. Comp. by Patricia K. Ballou. A Reference Publication in Women's Studies. Boston: G. K. Hall, 1980. 155p. $16. LC 80-21042. ISBN 0-8161-8292-2.

Women in Management, 1970–1979: A Bibliography. Comp. by Judith A. Leavitt. CPL Bibliography no.35. Chicago: CPL Bibliographies, 1980. 40p. $8. LC 80-22716. ISBN 0-86602-025-7. (CPL Bibliographies, 1313 E. 60th St., Chicago, IL 60637.)

Woolard, Wilma Lee Broughton. *Combined School/Public Libraries: A Survey with Conclusions and Recommendations*. Metuchen, N.J.: Scarecrow, 1980. 204p. $11. LC 80-36742. ISBN 0-8108-1335-1.

Brand-New from

Health Servi Directory

A Topical Guide to Clinics, Treatment Centers, Rehabilitation Facilities, Counseling/Diagnostic Services, and Care Programs, with Descriptions and Sheltered Related Human Service Institutions, Agencies, Associations, and Organization Names Sources of Information for Each Topic.

First Edition, 1981. Edited by Anthony T. Kruzas. 620pp. Index to Organ and Keywords. $60.00. (SO)

A companion volume to Anthony Kruzas's highly praised *Medical and Health Information Directory,* this encyclopedic reference work lists and locates specific clinics, centers, and services 33 areas of national and social concern:

Aging...Alcoholism...Alternative Birth...Arthritis...Blind...Burns...Cancer...Cystic Fibrosis Deaf...Drug Abuse...Eye-Banks...Family Planning...Genetic Diseases...Hemophilia...Hom Health Care...Hospices...Medic Alert...Mental Health...Migrant Health...Multiple Sclerosis...Muscular Dystrophy...Osteopathic Medicine...Pain...Preventive Medicine... Rehabilitation...Runaways...Sickle Cell Anemia...Smoking...Spinal Cord Injury...Sports Medicine/Physical Fitness...Sudden Infant Death Syndrome...Tel-Med...Battered Women.

Convenient Arrangement for Easy Access

Each type of unit is treated in a separate chapter; entries are arranged geographically with brief annotations provided for selected categories. Chapters also contain detailed descriptive annotati for all related government agencies, nonprofit voluntary associations, and professional societies. Total number of entries exceeds 19,000.

Because of its comprehensive scope, the new *Health Services Directory* will, in many libraries, obviate the need for as many as 20 directories covering individual areas.

Related Titles Also Available on 90-Day Approval from Gale

Medical and Health Information Directory, Second Edition

Edited by Anthony T. Kruzas. Covers over 16,000 agencies, companies, libraries, publications, and associations in 36 sections. First edition was "Outstanding Academic Book" *(Choice)* and "Outstanding Sci-Tech Book" *(Library Journal).* 856pp. 1980. $110.00. (SO)

Health Organizations in the U.S., Canada, and Internationally, Fourth Edition

Edited by Paul Wasserman. Details on over 1,400 voluntary associations, professional societies, etc. With a subject-classified listing. 327pp. 1977. $48.00. (SO) *(5th ed. in prep.)*

(SO) These titles are available at Gale's 5% Standing Order discount.
All books published and distributed by Gale are sent on 90-day approval.
Customers outside the U.S. and Canada add 10% to prices shown.

GALE Research Co. **Book Tower**
Detroit, MI 48226